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Address

THE STATUS OF THE FIGHT AGAINST CANCER OF THE UTERUS.

ADDRESS OF CHAIRMAN OF THE SECTION ON OBSTETRICS AND DISEASES OF WOMEN AT THE FIFTY-EIGHTH ANNUAL SESSION, ATLANTIC CITY, JUNE, 1907.

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To those that are essentially observers this would seem to be a hackneyed subject. To read the titles of monographs and papers as they appear in library catalogues and in the *Index Medicus* they could infer that great enthusiasm exists in our professional ranks in the treatment of cancer; that it is curable by several modes of treatment and that any investigation into the etiology of it is analogous to that of malaria—to prevent the morbidity rather than the mortality of a curable disease. They would find surgical treatment brilliant in its success, and that the success thus secured is far exceeded by Roentgenization and by the employment of that newer and therefore much more up-to-date remedy, radium. W. Deane Butcher is really comparatively modest in his claims for the curative effect of radium on cancer, for he does not claim much for it in the uterine cancer. He opens his paper,[1] however, on "The Action of Radium on Malignant Neoplasms," by saying:

> In the whole range of experimental medicine there is nothing better authenticated than the fact that a small superficial neoplasm—be it lupus, rodent ulcer or epithelioma—may be destroyed by the radiations of radium. They simply wilt and wither away under the influence of the Becquerel rays like an uprooted weed under the action of sunlight.

Many are the reported cures by these two agents in conditions in which surgical procedures have either been denied or have failed. These failures constitute the small shortcoming of surgery. In a few failures of this kind even these two powerful and mysterious agents have been treated unfairly, it would appear, by the impatient but industrious workers, as some cases have been reported during the progress of the successful treatment. Ample compensation for the small point of too early report is found in the rapid progress toward recovery noted or the expressed hope for such result. How different this is from the actual facts and conditions as known by those brought into direct contact with this terrific disease. By them it is known that cancer of the uterus is one of the worst scourges that flesh is heir to and that we feel almost powerless to lessen its practically fatal termination.

NATURE OF CANCER OF THE UTERUS.

It appears that in no walk of life, in no class of society, in no race of people carefully studied, and in no country, are the women free from this disease. In the unexplored regions of Africa and in the North American Indian absence of this disease has by some writers been asserted. Probably further investigation will prove the fallacy of such statements. If not, then civilization will no doubt carry this curse to those people. And, too, reversion to a primitive type may be the solution of the most vexing question of how to rid the human family of cancer. For the Hebrew race less frequency of it has been claimed by Vineberg and others. Some have likewise recorded opinions that the negro in this country enjoys partial immunity. My own experience is that this race has no great advantage, if indeed any at all over the whites. I nearly always have in my wards some cases of cancer of the uterus or of the breast in negro women. This disease seems to behave much like several diseases that depend for their existence on certain pathogenic organisms. Its existence in early functional life of the uterus is a great rarity, while in the last few years preceding the menopause when its functional life is fading, it is very common, and for the first ten years after the menopause has marked the end of procreative life, and consequently decadence of the uterine mucosa, its occurrence is very common. Cancer of the uterus, whether of the body or of the cervix, is essentially a local disease at the beginning. That fully 80 per cent. of the cases seen by the gynecologist exhibit a condition no longer that of a new growth limited to the organ is indeed lamentable. Like the history of cancer in other structures, the disease soon loses its local character. It passes to surrounding and remote structures through the lymph and blood channels. This process is most rapid in the varieties that begin in the cervix and in the youngest subjects. Usually the microscope can easily trace a continuous extension of the disease to the ligaments and to certain chains of lymphatic glands. In such the extension is found to be by the lymphatic system. But this is not true in all instances. Various gynecologic surgeons accustomed to having carcinomatous uteri and all tissues removed therewith carefully examined by serial sections tell us of some surprising phenomena thus discovered. They have found nests of cancer isolated and at some distance from the uterus. The lymphatic glands involved by the neoplasm are not always enlarged sufficiently to be macroscopically discovered, nor are all the enlarged lymphatic glands found in the broad ligaments and along the iliac vessels infiltrated by cancer. A curious phenomenon that was emphasized and illustrated by Prof. von Rosthorn, in his able address before this Section last year, was that in apparently early cases in which but one side of the cervix seemed to be involved, isolated areas of cancer were found in surrounding tissues of the opposite side. These facts are disturbing elements in the prognosis of any given early case. Another interesting feature is that entirely independent foci of cancer have been found in the same cervix, while cancer foci in the uterus and in the breast I have in a few instances noted. Cancer of the breast

1. Arch. of Roentgen Rays, 1906, xii, 156.

and sarcoma of the uterus I have also noted as existing at the same time. When metastases in the liver or kidney occur the venous system has probably been the means of transmission. Taussig reported to the American Gynecological Society last month an interesting case of metastases to the ovaries in cancer of the cervix. These organs were adherent to the bottom of Douglas' pouch each by a long band of adhesion, probably of omental origin. The cervical cancer was of the squamous celled variety, as was the small metastatic growth on each ovary just at the margin of the attachment of the band to that organ. No evidence of the neoplasm could be found in the adhesion bands.

It would seem of the greatest importance that some agreement in classification be reached. Such classification in the study and report of cases would furnish much more reliable data and bring order out of the present jumbled condition of our knowledge of cancer of the uterus. Sampson of Albany has recently suggested a splendid working classification that if universally adopted would materially assist in the study of this disease.

CAUSES.

The great interest in cancer is to-day centered in a search for its cause. This is the more strenuous and general because of failure in its treatment. Bacteriology has done so much to combat other diseases and discover the essential micro-organism to particular ones that its efforts in the study of cancer are highly welcome to the clinicians dealing with this disease. The possibility of its existence being due to a specific parasite is supported by the published reports of many instances in which dwellings or rooms seem to have had the unfortunate property of imparting the disease to its occupants very similarly to scarlatina and tuberculosis. Besides, in no other line of study has so much valuable data been procured bearing on the cause of cancer. Well equipped and well endowed laboratories have been established for the purpose of studying cancer and the determination of investigators in the search is worthy of our fullest praise and encouragement. Thus far their labors have gone practically unrewarded, though Gaylord and Clowes and others have found that tumors may be transferred from one mouse to another and its growth continued, and, further, that the tumor can be propagated through several animals in this manner.

Vulnerability of tissue seems to act as a strong causative factor. This feature is demonstrated in the almost constant invariability of its occurring in the uterus that has been rendered vulnerable by traumatism, by inflammation, by decadence of functional activity and other states not necessary to mention. Age has unquestioned influence on the occurrence of cancer of the uterus. This is probably much greater in the varieties that begin in the body of the organ. We find cancer of the uterus during the first half of the functional activity of the organ so rarely that we are apt to remember the instances individually. Between the ages of 30 and 60 years may be termed the cancer age, though the end of that period does not absolutely limit the development of the disease. According to Edmund Owen the directors of the Research Laboratory of London found this same incidence in the lower vertebrates as well as in the human subject. That is, a close association between the incidence of cancer and advancing years. In 63,000 head of cattle slaughtered in Glasgow, in 1902, cancer was found in 27—all old cows sent from Ireland. The same incidence was noted in mice, horses, dogs, cats and fish.

That heredity is an influential cause is an unsettled question. In my judgment it enters largely. I have known three successive generations inflicted by it. At present in my service at Providence Hospital there is a white woman, 46 years of age, whose mother died of cancer of the uterus. On my first examination of this patient I found cancer of the uterus had spread into the broad ligaments and vaginal walls. My diagnosis was made and the examination merely confirmed it and furnished data for the prognosis. When considering the subject of treatment I shall have occasion to again refer to this case, as I believe it one typical of professional neglect. I recall another family of four sisters, all of whom had cancer. In my experience nearly all of my patients have had hereditary histories. In this connection one must give some attention to the question of contagion of cancer. In latter January of this year a lady died of cancer of the uterus that had advanced remarkably in various directions. The inguinal lymphatic glands were prodigious, some being more than an inch in diameter, and the growth had so involved the vaginal wall as to protrude from the vulva. The rectum and bladder did not escape involvement. Her constant attendant and nurse until a few weeks before her death was her daughter, a very spare maiden lady of 50 years. One night about a month after the mother's death the daughter experienced a sharp pain in the upper margin of the right breast and feeling it with her fingers thought she discovered a hard mass about one-half inch in diameter. She was much alarmed and sent for me the following morning. My examination was confirmatory, though no enlarged axillary glands were felt. The following morning a very radical operation, including removal of both pectoral muscles was done. Between these a large gland was found that the pathologist pronounced the same as the small tumor in the breast—carcinoma.

A. Lapthorn Smith[2] has published a very interesting paper entitled "Is Cancer Contagious?" After presenting statistics to show a wonderful increase in the frequency of cancer he offers many instances to show cancer is conveyed from one person to another by means of a parasite called *Cancriamaba macroglossa*. He claims cancer has increased all over the world 30 per cent. in one decade. He cites 3 instances of the disease conveyed from the genital organs of women to those of men. Sherrill[3] reports a collection of 43 cases of this kind. Many are the reported cases of direct transference of cancer in an individual from lip to lip, tongue to gums, cervix to the lower end of the vagina. Behla cites many instances of surgeons becoming infected by cancer in operation. Doyen claimed the *Micrococcus neoformans* was the agent essential in the production of cancer. The special commission sent from London to Paris failed to confirm bacteriologically or therapeutically Doyen's claims for his discovery of the cause or his results in serum treatment of cancer.

Beard, university lecturer in comparative embryology of the University of Edinburgh, extends Cohnheim's theory of neoplasms. He says the cancer cell differs from other cells solely in the characteristic that it is a latent and aberrant germ cell unmodified as it should have been in the ordinary course of the development of the embryo—that it is not a somatic cell, but one that

2. Internat. Jour. of Surg., 1906, xix, 397.
3. Am. Gynec. and Obstet. Jour., November, 1901.

should have disappeared. In extension he says the substance that should have destroyed it at about the sixth week of embryonal life is the pancreatic juice from which trypsin and the diastase, amylopsin, are extracted. On this theory he built his plan of the treatment of cancer by these remedies. I shall discuss these remedies in speaking of the treatment of cancer. Gaylord, four years ago, discovered the *Coccidium sarcolatum*, from which much was expected. Since that time its intimate relation with cancer has been confirmed and denied by various biologists. Some have suggested it is due to contamination incidentally in laboratory work. Others have suggested that it is a by-product of degenerative tissue change. No etiologic relation between it and cancer has been established.

TREATMENT.

We may now discuss the efforts being made in the direction of eradication of cancer of the uterus. All are agreed that, since it is at first essentially a local disease and therefore eradicable and subsequently involves structures that can not be removed, becoming, *pari passu*, ineradicable attempts at eradication must be made early. It must be attacked while it is still limited to the uterus if eradication would be reasonably expected. Such being the case, early diagnosis is of necessity an essential to early attempt at removal by whatever means adopted. This essential is the paramount obstacle to early treatment. Unfortunately in this relation the uterus is an organ concealed from view. In addition many women, from a sense of modesty or from a belief that women customarily have some uterine affection, neglect themselves and fail to seek relief.

Another obstacle is the deep-rooted misconception that is held by the laity, and, I state with great regret, by the careless general practitioner of medicine, namely, that the menopause is characterized by irregular uterine hemorrhages or menorrhagia and leucorrhea. In the case to which I referred early in my paper in connection with professional neglect, I learned from the patient, whose mother died of cancer of the uterus, that two years ago, at the age of 44 years, her menstrual flow began to be prolonged and the quantity to be increased. One year ago she placed herself in the care of a physician who explained to her that the change of life was usually characterized by such phenomena as she exhibited and without examination he prescribed for her during a period of six months, always assuring her that in due time the flow would cease and she would be well. During the last six months pain was added to her symptoms, but believing she would soon be well she was not in the care of a physician. The cancer has nearly destroyed the uterus, has spread into the surrounding tissues, including the vaginal walls, and her condition is one of pitiable hopelessness. With such handicaps, the gynecologist has not been able to demonstrate the curability of cancer of the uterus and the general practitioner, to an alarming degree, believes attempts to eradicate it are worse than useless.

Constant and industrious effort will be necessary for many years to remove these barriers to early diagnosis and early treatment of uterine cancer. Before early diagnosis will be feasible, women and physicians must be educated to the plan of women being frequently examined during the cancer period of life by those competent to recognize this disease in its incipiency. They should submit regularly to such examinations, as they do to having the dentist examine their teeth. It would seem desirable to tell women such examinations are desirable, as dire results frequently result from neglect of such practice. We have no difficulty in allaying fears of pregnant women when we insist on their furnishing specimens of urine as often as desired for examination. We tell them it is a precautionary measure and the same reason would be sufficient for this precaution against cancer. If a laceration of the cervix or other abnormal condition be present it may be assigned as the reason for examination regularly at short intervals. Certainly this plan thoroughly executed would enable early diagnosis.

In my judgment such early diagnosis could be followed by radical surgery with a very high percentage of cures. In an early stage of cancer of the uterus radical surgery has proved very satisfactory. Splendid work has been done in later stages of the disease by Byrnes' method of applying the galvanocautery. As has been mentioned, the employment of *x*-rays and of radium has been afforded a large field. Trypsin and acetone are now in vogue, though I believe only in cases not amenable to radical surgical operations. Opsonic treatment is in but its earliest infancy as applied to uterine cancer. Radical surgery has continued since the year 1600 to be the remedy most commonly employed for early uterine cancer. The electrothermic angiotribe of Downes is found to be a very useful adjunct to radical surgery in the early stages.

The *x*-rays have not proved of value in cancer of the uterus. Only the later stages of the disease have been subjected to this plan of treatment. Under such treatment the disease has progressed to a fatal termination. The uterus appears to be too deeply situated in the body to be materially affected by the *x*-rays. As to radium, I have already quoted from Butcher that while he is enthusiastic in advocacy of it for superficial growths, for uterine cancer he considers it inert. Gellhorn's recent report on the beneficial effect of acetone in advanced uterine cancer is very modest regarding its curative effects. He asks for its trial, which I am sure the profession should accord it. Trypsin is furnishing a means to no small amount of enthusiasm on the part of those employing it. No one reading Morton's report[4] can avoid the conclusion that it is of great service in some cases, though no special mention is made of uterine cancer. Beard believes that after the cancer cells are destroyed by trypsin, amylopsin, the pancreatic diastase, should be administered for purposes of elimination. The remedy has been in use for a period of time entirely too short to give it any credence, whatever, as an agent. The surgeon has from clinical experience learned he can not consider the probability of cure until fully three years have elapsed after operation. Even years after the three years limit has transpired return of the disease occurs. A significant fact is that in England this remedy for some reason has been very disappointing. We should encourage its further use if apparent cures are secured by its agency and await patiently end results which should be interpreted without bias.

Immunity against cancer growth in mice has been produced by grafts repeated. The reports of Gaylord, Bashford and others have given us hope that something in the nature of inoculation may be worked out. Bashford and Murray have found that a few drops of blood from a normal mouse injected into the circulation of a mouse to be subjected to cancer grafting prevents the graft from being successful, though blood from another species of animal has no effect on it. To me this seems close to a successful opsonic treatment.

4. Medical Record, 1906, lxx, 893.

Adamkiewicz[5] claims to cure cancer by administration of trimethylvinyl ammonium. He claims that it has a physiologic effect similar to that of the toxin of cancer parasites. He claims that by autopsies made on persons dying from intercurrent diseases years after the employment of this drug have demonstrated the absence of cancer. His theory is that cancer may be killed by its own poison, like a person by his own carbonic acid.

CONCLUSIONS.

From a critical survey of the subject of the treatment of cancer of the uterus at the present day the following may be said: 1, we are rightly ignoring the aphorism of Hippocrates to the effect that "it is better not to apply any treatment to deep-seated cancer, for, if treated, the patients die quickly; but if not treated they hold out for a long time." We are striving to educate women and the general physician to the necessity of adopting means to arriving at the earliest diagnosis possible and that followed by prompt operation of a very radical kind; 2, special care in classification of the varieties of uterine cancer is essential to greater enlightenment concerning the history of that disease; 3, the employment of *x*-rays and radium are of little use and should not be employed in cases that are diagnosed sufficiently early to offer hope of eradication by surgical means; 4, the cautery in any form should not be employed as an alternative for radical surgery, but be limited to those cases that have passed the stage in which eradication by operation seems probable; 5, trypsin has not been tried sufficiently to establish its proper position and as it has not been proved to be superior to radical operation valuable time should not be employed in using this remedy in cases curable by surgery; 6, much is being done to alleviate the suffering and to postpone the fatal termination of those cases no longer amenable to radical surgical operation; 7, the experimental work on animals thus far done offers hope of some means, opsonic or otherwise, for a more successful and less dangerous and less difficult plan of treatment for this disease than radical surgery; 8, radical surgery affords the best results at present; 9, the vaginal route does not afford the greatest possibility for eradication; 10, we have reason to believe with Childe ("The Control of a Scourge") that this disease can be controlled; 11, rooms which individuals suffering from cancer have occupied should be fumigated before non-cancerous occupy the same and in the light of the authentic reported cases of immediate and mediate inoculation those caring for such patients should regard it as a contagious disease.

5. Bull. de l'Acad. de Méd. de Paris, 1906, 3 s., lvi, 290.

Liquor Cresolis Compositus as a Disinfectant.—The superior germicidal value of this official disinfectant is strikingly shown by some recent investigations. The United States Department of Agriculture formerly recommended a mixture of phenol (carbolic acid) and lime for the disinfection of cattle cars, but as it met with some objections it was determined to try liquor cresolis compositus of the U. S. Pharmacopeia as a cheaper preparation. Comparative experiments (Bulletin 100) showed that the mixture of phenol and lime was less efficient than phenol alone, but that the germicidal power of liquor cresolis compositus, even when made from the least active cresol, is nearly one and a half times greater than that of the same amount of carbolic acid. The germicidal efficiency increases with the boiling point of the cresol, orthocresol with the lowest boiling point being least efficient. Liquor cresolis compositus made from commercial cresols may exhibit unimportant variations in germicidal power owing to variations in the cresols.

Original Articles

HOW CAN WE LESSEN THE MORTALITY OF UTERINE CANCER?*

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The discussion of this subject becomes difficult at its onset because we do not know its cause. The ablest investigators have diligently sought to determine its origin and to lay bare the mystery of its development, but thus far in vain. The inclination of some of the best scientific minds has been to assign a bacteriologic cause, and numerous parasites have been accused of being responsible for its production, but later investigations have not demonstrated their presence as constant.

Efforts have been made to associate the various manifestations artefact cell inclusion and cell degeneration with some specific germ, but the apparent discoveries of one have not been substantiated by other observers.

The researches of Farmer relating to the existence and separation of the chromatic elements seems to afford an explanation for the origin of the disease in chemical reaction, but whether the impetus be imparted to congenital embryonal cells or be the result of parthenogenesis remains for future determination.

Clinical observations have made it evident, however, that the predisposition to the occurrence of malignant disease can be both congenital and acquired. Congenital predisposition or heredity may be considered the inheritance of increased vulnerability or decreased resistance and may occur independent of any family history of cancer. The lowered resistance which favors the onset of tuberculosis likewise makes the occurrence of cancer possible. In the great majority of cases, however, the predisposition is acquired through changes in cell structure as the result of prolonged or continual irritation. The history of the occurrence of cancer in the uterus seems to make this statement justifiable, as this disease occurs with the greatest frequency in that portion of the uterus, the cervix, which is most exposed to injury and irritation. Not only is this true, but it occurs in greater frequency in women who have given birth to children, or cases in which it is evident the cervix has had the greater opportunity to have been the seat of injury and futile efforts at repair. There are exceptions, it is true, in which cancer occurs in the cervix in women undoubtedly chaste, but these instances are so exceptional as to emphasize the rule. These statements accepted, it becomes evident that the treatment may be divided into preventive, curative and palliative, the first two of which only concern us in the discussion of the subject chosen for the title of this paper.

The value of the prevention of cancer can not be overestimated when we consider the insidious onset of the disease, its early invasion of the adjacent and even remote structures, and the grave prognosis in all cases in which it is recognized; it must be apparent that preventive measures are of the greatest importance.

Prevention comprises, first, the correction of all local conditions which promote irritation and result in the formation of new tissue. Every gynecologist, every

* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Fifty-eighth Annual Session, June, 1907.

physician in general practice, is familiar with the influence produced on the uterus by a more or less extensive laceration of the cervix, especially if a careful aseptic management of the puerperium has been neglected.

The uterus remains large and heavy from ineffective involution, hemorrhage and leucorrhea are symptoms of the resulting endometritis, the woman complains of sensation of weight and dragging from the heavy organ, from hemorrhage after coition or exercise from the injured cervix. The longer the condition is permitted to continue without proper treatment the worse the complications become. The lips of the cervix are separated, and the endometrium thickened, filled with distended Nabothian glands, which, from obstruction of their ducts, become extensively everted. The torn surfaces are covered with granulations or cicatricial tissue, and in the angles this frequently presents a gristly hardness, pressing on the terminal nerves. The uncleanly, neglected patient, suffering from such a group of symptoms and physical signs, presents a condition which greatly simulates incipient carcinomatous degeneration. Inflammation of the cervix, even when not lacerated, leads to increase of connective tissues, proliferation of epithelium, obstruction and occlusion of the ducts of Nabothian glands, to their enlargement, to narrowing of the cervical canal, or the projection of the enlarged gland into the tissues of the cervix until its wall is penetrated, the glands show on the vaginal portion, and when extensive glandular involvement exists the entire cervix may have undergone this cystic degeneration. Is it surprising that malignant disease rapidly transcends its original source if it should become engrafted on a condition such as this?

Prolonged irritation may lead to alterations just as grave within the uterine cavity. Increase of connective tissue, obstruction of gland ducts, compression and atrophy of glands or their development into retention cysts which may be the origin of uterine polypi, increasing the tendency to hemorrhage and discharge. Similar conditions are produced by the retention of embryonal products as portions of placenta, membrane and blood clot after abortion, premature labor or delivery at full term, when infected, inflammation, slight or severe, results, dependent on the virulence of the infection, or the powers of resistance of the patient.

When non-infected such products may become partially organized and be retained for a length of time, producing the continual irritation of a foreign body. If we accept the theory which experience seems to establish, that continued irritation favors the development of malignant disease, then it becomes self-evident, in order to prevent its occurrence or limit its frequency, the physician must institute measures to avoid irritation and chronic inflammation of the pelvic organs. The evacuation of the uterus, whether during gestation or at its completion, must be effective and proper contraction of the organ secured. Injuries of the cervix and pelvic floor which are likely to produce subinvolution must be repaired and thorough asepsis practiced in the after-treatment. Where the patient comes under observation months subsequent to the injury and secondary conditions have developed, treatment must be adapted to the peculiar condition. In all such cases the uterus should be dilated and curetted and the cervix repaired by trachelorrhaphy when the mucosa is free from eversion and marked glandular disease.

It is folly to consider trachelorrhaphy when the mucosa is thickened, extensively everted and presents glandular degeneration, for the operation in such cases but serves to obstruct uterine drainage and aggravate the subsequent condition. In such cases amputation of the cervix at the expense of its inner surface is the proper procedure.

The removal of all sources of irritation necessitates attention to displacements, to periuterine inflammation and to uterine myomata, particularly of the submucous and interstitial varieties.

Prevention of cancer requires, second, an investigation of the manner in which the various functions of the body are performed and the correction of disordered conditions of the gastrointestinal tract.

The ingestion of inordinate quantities of food, of food illy prepared, of unsuitable character and improperly masticated, necessarily results in decomposition within the gastrointestinal tract and the formation of toxins which produce a deleterious effect on various parts of the body. As a semi-excretory organ, the uterus is one which is likely to feel the effects of such chemical irritants. The diet should be carefully regulated, the inhibition of water encouraged, and constipation avoided. Lowered vitality should be combated by the ingestion of eggs and milk in large quantity, by outdoor exercise and in extreme cases by sleeping in the open.

The careful oversight of the patient as above cited affords the greatest probability for the early recognition of the development of malignant processes. The successful treatment depends to an extreme degree on an early diagnosis. The surgeon is accustomed to consider hemorrhage, pain and foul discharge as pathognomonic symptoms of carcinoma, and, fortunately, the profession is now so educated that it does not ignore the possibility of these symptoms. Much more rarely than formerly is it found that women are comforted for the presence of profuse menorrhagia or metrorrhagia by the assurance that they are undergoing the "change of life." It must not be forgotten, however, that there is no pathognomonic symptom of cancer. Hemorrhage just as or even more profuse may be associated with a number of benign conditions. Pain is a frequent symptom of every acute or subacute and of many chronic inflammations of the pelvic structures. Foul discharge may be associated with retained fetal products, retained inflammatory collections within the tubes, the uterus or the pelvis, and from carious and sloughing submucous fibroids. It is evident, then, that neither one nor all these symptoms can be accepted as positive assurance of the existence of carcinoma, but rather as a danger signal indicating the importance of prompt and thorough investigation to determine what is the threatened disaster. When the vaginal portion of the cervix is the seat of disease it is generally easily recognized even at an early stage. Involvement of the cervical canal is usually readily determined by the irregularly increased size of the cervix, a sensation of increased resistance affecting a part rather than the whole of this portion of the uterus. In early stages it may be necessary to dilate the uterus with tents, and even then to excise a portion for microscopic examination. Cancer affecting the body does not always increase the resistance of the organ, though in the majority of instances there is an infiltrated area which gives a sensation of rigidity and resistance. Occasionally I have seen cancer of the body develop in a polypoid gland and the proliferated tissue would fill the uterine cavity with a large cauliflower mass which stood in intimate relation with the uterine surface at only one point. We

can only hope to lessen the mortality of the disease by the thorough eradication of the organ and tissues involved.

What hope can be extended that even radical measures will afford escape from this dread disease? Unfortunately, no positive assurance can be given in any individual case that even the most radical procedure will be followed by cure. In one patient a vaginal hysterectomy for extensive destruction of the cervix in which but little benefit had been expected will be followed by years of freedom from recurrence. This has been my experience in a number of instances. A patient now comes to mind in whom the cervix was completely destroyed. A vaginal hysterectomy was done merely because I could not turn her away without an effort for her relief, yet more than ten years have followed free from recurrence. In other cases a slight involvement of the cervical canal or even of the body of the uterus for which an extensive abdominal hysterectomy has been done have been quickly followed by a recurrence, which has rapidly progressed to a fatal termination. Our acquaintance with the tendencies of the disease are not sufficient to enable us to determine what course it will pursue in any individual case. It is possible that the course is not so much dependent on the disease processses as on the characteristics of the individual affected. If due to a chemical reaction, then the continual presence of a large quantity of the reagent in contact with cells prepared to develop under its stimulation tends to promote the rapid progress or extension of the disease. Experience has demonstrated that the earlier in the life of the individual the disease occurs, the more rapid its progress.

Experience has taught me to give a very unfavorable prognosis when cancer of the uterus appears prior to the age of 40 years. Possibly the hopeless outlook is, in part, due to the greater activity of the lymphatic system, the vessels of which decrease in size and number with the advent of the climacteric.

The route by which the disease shall be attacked is still the subject of controversy; the majority concur that the entire uterus should be extirpated when any portion of it is the seat of cancer. Not only should the entire organ be removed, but the excision should be, if possible, beyond the limits of the extension of the disease. As it is possible only to determine minute nests by the microscope, as much parametrial tissue should be removed as safety of the important structures of the pelvis will permit. In recent years many surgeons have advocated the thorough removal of the nearest lymphatic glands. As it is impossible to be certain that all noninfected glands are removed, it is wiser to follow the procedure of Wertheim and attempt only those which are infected as shown by enlargement. Schauta has disclosed that the enlargement of glands is frequently extended to the lumbar glands alongside of the abdominal aorta and, consequently, beyond the reach of the surgeon's knife. In order to insure the most effective removal of the disease the abdominal route should be the one of selection, inasmuch as it affords an opportunity to inspect the entire field, determine to some degree the extent of involvement and keep under observation important structures. It permits of the ligation of the uterine arteries external to the line of the ureter and in extreme cases the ligation of one or both internal iliacs. In extensive involvement it is important to extend the operation to the removal of a considerable portion of the vagina.

There is, however, a class of cases in which the vagina presents a route attended with less danger and with almost equally favorable results. It should be selected when the abdomen contains a large quantity of fat or where the condition of the patient is such that she gives but little promise of enduring a more protracted operation.

In conclusion, I would summarize my answer to the question asked as the title of this paper as follows:

1. The employment of measures at confinement and subsequently to secure a healthy condition of the pelvic organs.

2. The employment of constitutional measures to prevent the formation of gastrointestinal toxins and to obviate their baneful influence on the tissues of the body.

3. The careful study of pelvic symptoms in order to insure the early recognition of malignant disease.

4. The resort to early operation for the removal of the organ involved and all the circumjacent tissues that regard for the safety of important structures, such as the ureters, bladder and large pelvic vessels, will permit.

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DISCUSSION.

DR. THOMAS S. CULLEN, Baltimore, agreed with Dr. Bovée in that reliance must be placed on early diagnosis, and that in the late stages of carcinoma an operation is of no value. The instruction of the laity as to the early signs of carcinoma he considers a subject of the greatest importance. The committee of which Dr. John G. Clark is chairman, is carefully surveying the best means of instructing the public. The results of their labors will undoubtedly be of the greatest benefit. Dr. Cullen did not concur in the statement that the classification of cancer of the uterus is in a jumbled condition. It is true, he said, that no two cases of cancer of the uterus are exactly alike. There are three different varieties of epithelium of the uterus: (1), Squamous epithelium from the vaginal portion of the cervix, (2) the high cylindrical epithelium lining the cervical canal and the cervical glands, and (3) the low cylindrical epithelium lining the uterine cavity and the glands of the body. From each of these epithelia there springs a definite variety of carcinoma. Dr. Cullen has found it interesting to note the multiplicity of pathologic processes that may be present in the organs removed from one pelvis. In one instance he found (1) a subperitoneal adenomyoma; (2) multiple interstitial uterine myomata, (3) primary adenocarcinoma of the body of the uterus, (4) left pyosalpinx, and (5) a primary adenocarcinoma of the left ovary. The malignant growths in the uterus and ovary were entirely independent of one another, being of totally different types. Dr. Cullen emphasized that time is a very important factor in abdominal myomectomy for carcinoma. In doing the Wertheim operation the rapid removal of the parametrial fat is greatly facilitated by the employment of eight or ten Wertheim parametrial forceps. These are very long, exceedingly strong, and have a slightly curved beak, as shown in the illustration. By their use the operator is able to save at least half an hour. Dr. Cullen again emphasized that too much emphasis can not be placed on the necessity for using the utmost celerity, consistent with careful work, in abdominal hysterectomy for carcinoma. Dr. Cullen's experience coincides

Wertheim's parametrial forceps.—These forceps are ten inches long, are very stout and have a short curved crushing surface. They control the parametrial tissue and vaginal veins very thoroughly and on acount of their shape the ligature, when drawn tight, tends to slip under a forceps much more readily than when the ordinary forceps are employed.

with Dr. Montgomery's in that cervical lesions are responsible for carcinoma of the cervix. In nearly every instance where a malignant cervical growth developed the patient had one or more children. In cancer of the body of the uterus, he stated that a different etiologic factor seems to be operative. Many of these patients have never been pregnant. Endometritis seems in some way to favor the development of carcinoma of the uterine body. In the examination of about 1,350 cases of myoma he found carcinoma of the body 27 times. This fact, he thought, suggests that there may be a definite relation between myoma and the carcinomatous development.

DR. G. BETTON MASSEY, Philadelphia, has had good success in two cases of very early carcinoma of the cervix from the use of a modification of the zinc-mercury cataphoretic method described by him at the New Orleans meeting of the Association. The method embraces the use of zinc points, amalgamated with mercury, long enough to reach the cervix, the points being dissolved by the electric current and the nascent chemicals driven into the diseased tissue. The modification of the method has been to repair from using ether, but to push the treatment up to the limit of endurance of the patient. The treatment is repeated daily. At the end of ten days the slough is allowed to come away. Dr. Massey finds that he can use as much as 200 mp. for half an hour without real discomfort to the patient. A calculation will show that 200 mp. for ten half-hours equals 1,000 mp. for one hour, which is capable of killing a mass nearly as big as the first, if it is done at once. By this gradual method all risk of penetrating the peritoneal cavity is avoided. This method has the added advantage of freedom from infection of the healthy tissues, which is probably at times caused in cutting operations for cancer of the cervix by the vaginal route.

DR. MARGARET CLEAVES, New York City, has had a somewhat extended experience with trypsin in the treatment of malignant conditions during the past year, and in every case there was relief from pain, improved appetite, digestion and metabolism, modification to control of discharge and odor, with tumefaction, softening, even to breaking down and in some instances a degree of absorption of tumor masses. This experience has been without exception in postoperative and inoperable cases the following classification: (1) Intestinal surgical interference, (2) postoperative, (3) inoperable, (4) metastases, (5) non-malignant. Dr. Cleaves has found encouragement, aside from the clinical condition alluded to, in the physiologic action of the pancreatic enzymes, establishing as they do, when superposed on malignant tissue, tissues rich in glycogen—an eosinophilia. This is established in the second to the third week of treatment, steadily increasing to a maximum at which it is apparently held when the patient progresses favorably. In fatal cases it drops to a minimum before death. Trypsin seems to show a selective action for malignant tissue and in every case treated by Dr. Cleaves the trypto-glycogenic reaction was present in greater or less severity, varying with the degree of malignancy, characterized by chilly sensations, to severe chill, rise in temperature, nausea, malaise and headache, save in the single case of Class 5. This case followed an absolutely uneventful course. So different was this from all other cases, postoperative or not, that Dr. Cleaves requested the surgeon referring the case, who stated that the pathologist's examination showed carcinoma, to give her the pathologic findings and a slide. This was done and the latter was pronounced benign by her own pathologist, an opinion that was confirmed by eminent pathologists in New York City, by the State Cancer Laboratory at Buffalo and by Dr. John Beard of Edinburgh. There was no trypto-glycogenic reaction, but greatly improved metabolism and a gain of twenty pounds in two months. Dr. Cleaves was of the opinion that trypsin should, in the present state of our knowledge, be used universally in connection with surgery.

DR. H. J. BOLDT, New York City, stated that the employment of preventive measures in uterine cancer is one of the important factors and by many not sufficiently considered. Another feature is that of age. He believes that in the majority of instances when malignant disease occurs prior to the age of 30 years, the persons affected are doomed. He recalled only one such young person, who did not have an early recurrence following radical operation. In a person well advanced in age, beyond 50, where one can recognize the existence of malignant disease at an early date, and where it has not invaded the structures beyond the uterine tissues, the vaginal route, in some cases with the addition of the paravaginal incision, is, in Dr. Boldt's opinion, the preferable procedure. The operation can be done more quickly and with less shock than by the abdominal route. His personal experience is that with the performance of the abdominal operation, with the disease well advanced, the ultimate result is not good either. In regard to the point raised by Dr. Cleaves and Dr. Massey, he said that he has yet to see the first case of cure by any other than surgical means when cancer has been positively diagnosed.

DR. S. STRAUSS, New York City, used trypsin in three cases, but with no permanent favorable results. He got the reaction mentioned by Dr. Cleaves in one case, but in the other two got no reaction at all. He thought that it would be unwise to accept the trypsin treatment as justifiable. He has experimented with the trypsin method and has one apparently cured case in which he gave injections of serum taken from a mare suffering from carcinoma. The case was one of cancer of the pylorus, operated on by Dr. R. Abbe. There was an extensive recurrence. The patient was emaciated, weighing only ninety pounds, and suffering intense pain, which necessitated the use of 10 grains of morphia daily. The serum was injected on alternate days, the patient improving constantly until no more morphin was necessary. After one and a half years he weighs 200 pounds and apparently is in the best of health. Dr. Strauss has other cases that are doing as well with the serum as with the trypsin treatment. The serum enables him to discontinue the use of morphin. The action of the serum is the same as that obtained in the opsonic treatment described for other diseases. It raises the toxin destroying powers of the leucocytes. As carcinoma is extremely rare in the lower animals, it has been impossible to obtain a sufficient amount of serum to enable him to use it in every case that has come under his observation. In regard to the treatment of cancer of the uterus, one ought to remember that carcinoma pronagates itself through the lymphatics and that when operating we should handle the tissues gently. If one could seal up the lymph vessels with the actual cautery at the time of operation much would be done toward limiting the spread of the disease and preventing recurrences.

DR. DANIEL H. CRAIG, Boston, referred to a report he made four years ago in which he detailed the results of an investigation of the cases of carcinoma treated at the Free Hospital for Women in Boston. His paper dealt with the question of repairing cervical lacerations. Incident to that came up the question of the influence of this condition on the production of cancer. In tracing all the cases on record, which could be traced, no case was found in which the cervix having been properly repaired and not being subsequently reinjured had developed carcinoma. In many of the cases twenty years have elapsed since the operation. Dr. Craig thinks that practically all forms of uterine cancer are the result of some form of cellular irritation. Therefore, a great deal can be done in the avoidance of future carcinomatous conditions if the medical profession can be made to realize that any form of cellular irritation about the uterus should be removed.

DR. J. H. CARSTENS, Detroit, said that as long as the cause of cancer is unknown, it is difficult to prevent and lessen the mortality of cancer. It is known that cases with irritation have a tendency to develop into cancer; but, if physicians will bear in mind that cancer always, at some time, is a local disease; that at some time in its course the tumor is as big as a pin head; that at some time it is as big as a pea, and that it will become as big as a walnut or an orange, and if on discovering this local disease, do the radical operation, much will be done to lessen the mortality. In curetting, or in operating for lacerated cervix, the tissues removed should be examined carefully and many times the cancer will be found to be in the very early stage.

DR. E. E. MONTGOMERY, Philadelphia, was in accord with the majority of the speakers. He said that it is possible that some

of the methods of procedure that are being advocated may afford the clue or open the avenue through which this disease may be combated; but, until that time comes, he urged that in every case in which the physical examination engenders the hope that the disease is still local, a radical operation should be done, and that the knife should be the means by which the disease should be combated. Other methods of procedure may be employed in those cases in which it is evident that the knife can not be used. They are in accord with a legitimate line of investigation, and may afford the means with which to combat the disease successfully, but until that is demonstrated the means shown to be most effective should be used.

PREVENTION OF PERITONEAL ADHESIONS BY ADRENAL SALT SOLUTION,

WITH ESPECIAL REFERENCE TO THE PELVIS.*

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Peritoneal adhesions result from a pathologic process active within or adjacent to the peritoneum. Their formation is Nature's effort to combat an injurious process, and is effectual in establishing a limiting wall and often in making inactive the irritating agent. In fulfilling these purposes, peritoneal adhesions are agents for good and a protection to the organism. If these adhesions encroach on, constrict or in various other ways impair the function of the adjacent organs, however, as most frequently they do, they then become a menace to the parts and jeopardize the comfort and vitality of the individual in whom they may occur. When such condition exists it commands the effort of the surgeon to give relief. The prophylactic remedy lies in preventing their formation, and this is perhaps best accomplished by removing the irritant before such mischief can be done. This may be illustrated by the removal of the appendix previous to extensive pus formation, or in gall-bladder drainage for cholecystitis before its rupture or extension of the septic material has taken place. The remedy, when adhesions are already formed, is to separate the adherent parts and prevent their subsequent reuniting.

The peritoneum is a serous membrane. Its surface is covered with a very thin layer of endothelial cells that are loosely approximated. Just beneath the surface of these delicate cells lie the blood and lymph channels. Osmosis of serum and lymph is active between these channels and the peritoneal cavity. This takes place through the interstices that interpose the endothelial cells. Exosmosis is increased by any condition which increases the blood supply to the parts, thereby distending the walls and increasing the caliber of the interstices.

By these structural provisions the peritoneum is highly exudative and absorptive.

When an irritant is active at the peritoneal surface there is an overfilling of the blood vessels, with subsequent exudation of serum and transmigration of leucocytes. This exudative product is cohesive and by its nature fastens together any and all adjacent surfaces. If the irritant becomes inactive, by limitation or otherwise, the exuded material organizes and forms fibrous tissue. This tissue has a tendency to further contract, thereby limiting motion and constricting the size of the attached organ. The evils therefrom are many and evident. In order to correct this condition it becomes necessary to get rid of the irritant, release the parts, remove the fresh exudate, prevent further exudation and to keep the approximal surfaces apart until at least partial repair has taken place.

REMOVE THE IRRITANT. RELEASE THE PARTS.

The conditions within the pelvis which command action for the relief and prevention of peritoneal adhesions are those resulting usually from inflammation of the tubes, ovaries and the appendix. Tubal and ovarian diseases usually have brought about extensive adhesions before their removal takes place. These adhesions are extended to the sigmoid, uterus, small intestines, omentum and parietal peritoneum. These inflammatory conditions are mostly pyogenic in origin, induced primarily by the invasion of one or more kinds of infective micro-organisms and the pus and the bacteria are usually pent up in a circumscribed mass. When the pus has been imprisoned for some time, the bacteria lose their virulence in the majority of cases, and often become inert. It is to collections of pus of this kind that the term "sterile pus" has been given. Whatever may be the condition, it is the duty of the surgeon to eliminate it, to get rid of the irritant. This is accomplished by enucleation and removal of the mass. There is another condition of local or general adhesions in which the irritant has been previously removed. When adhesions are the only evidence left of previous inflammation, these hold fast, incapacitating the adherent organs and causing distressing pain and other discomforts that invite correction. It becomes necessary to release the constricting adhesions: to separate the adherent surfaces. Too well does the surgeon know how strongly inclined these surfaces, oozing and bleeding after being torn apart, tend to immediately reunite when permitted to fall together. It is this class of adhesions which has exhausted the patience of the surgeon—and of some patients also—in repeated attempts to relieve by separation and replacing the viscera which reform, producing the same trouble again and again. Solution and removal of the exudate, prevention of further exudation, and keeping apart the surfaces should be the effort.

DISSOLVE THE EXUDATE.

The exudate consists of blood and lymph elements: blood serum leucocytes, and lymph when the exudate reaches the surface without a separation of the continuity of the structure; free blood with its coagulating ferments when there is a laceration of the parts and open vessels are leaking. When the exudate consists of serum, lymph and leucocytes alone, it is liquid of greater or less density. If it be free blood, coagulation takes place early and clotting is consequent. Fluids are absorbed with ease; solids of large masses with difficulty. Fluids of low density are taken up more readily than fluids of high density. The factors which prevent coagulation or destroy coagulating ferments prevent peritoneal adhesions. In order better to facilitate the resorption of the peritoneal exudate, it is desirable to dissolve the mass into a fluid of low density. Saline solution is a most excellent agent for this purpose. It aids in the dissolution of the coagulum and dilutes the serum as well as maintains the solution and dilution during the time of absorption. The efficiency of saline solution in performing the function of dissolving, diluting and maintaining the blood elements in solution is demonstrated constantly by the method in practice for the examination of blood where blood counts are made.

* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Fifty-eighth Annual Session, June, 1907.

REMOVE THE EXUDATE.

Absorption of fluids from the peritoneal cavity is prompt, and, until the volume of the vascular system is taxed, is astonishingly rapid. Weger (1876) found that the peritoneum of a dog absorbed from 3 to 8 per cent. of the body weight of fluid in an hour. This rapid absorbing function of the peritoneum has been confirmed by subsequent investigations. While this is true of the first hour during which fluid is taken up, or until the vessels are surcharged, it is evident that the rate of absorption diminished progressively during the subsequent time in which continuous absorption takes place. The probable explanation of this is that the vessels and tissues have a reserve capacity for fluids, over and above their normal contents, and that until this extra capacity is filled, absorption takes place very rapidly, but thereafter takes up only so much fluid as the system is relieved of by excretion. It is known to be a fact that excretion is increased when fluid is taken into the circulation. This is well shown by the greater quantity of urine voided after injection of much fluid or after saline infusion. The amount of excretion for a given time is not equivalent to the bulk of fluid which is taken up during an equal period when absorption first begins, consequently the amount absorbed after the vessels are filled is less than it was before their capacity had been reached, much in the same manner as is the conduct of a sponge which fills very rapidly until saturated and thereafter absorbs only so much as is the amount lost from the suspended quantity.

PROHIBIT FURTHER EXUDATION.

So long as there is exudation on the surface, just so long there will be present the elements qualified to form adhesions. Not only is it necessary, then, to dissolve the exudate, but it is also essential to prohibit further leakage of these elements. As the leakage comes from relaxed and open vessels, that agent which constricts the lumen and closes the mouths of the vessels is most nearly certain in stopping it. The most potent vasomotor constrictor known is the active principle of the adrenal gland. Various names have been given to this substance by different chemists, but the action on the blood vessels is common to all.

Adrenalin chlorid has been the preparation of choice for our practice. When this agent comes in contact with a serous surface, though of very delicate dilution, it at once bleaches the part by constricting the blood vessels and squeezing the blood from the lumen. It acts most promptly and efficiently when in contact with the vascular walls. Though prompt in its action, its influence is of short duration. If, however, it be repeatedly applied it will maintain the contraction for a more prolonged period after each application until a persistent contraction is secured which yields very slowly. Again, if kept in constant contact, it does not yield its influence until removed and then sustains it for a prolonged period thereafter. In this action adrenalin is an efficient agent in prohibiting a further exudation after the salt solution has dissolved that which had found its way to the surface.

KEEPING APART THE ADJACENT SURFACES.

The fluid serves, too, to keep apart the separated surfaces. Its bulk and specific gravity are the contributing elements for this function. Its bulk displaces free viscera and its specific gravity aids the selection of the desired location for its action. The fluid finds its way to the most depending confines. When in the recumbent, erect, or a compromise of the two positions, Fowler's position, the site of the selection for the fluid is the pelvic cavity. The movable small intestines are displaced to the front and upward, depending in extent of their displacement on the amount of fluid used and the capacity of the pelvis. The fixed organs are but little moved. The uterus, as proved by experiments on the cadaver and observed in the living subject, is suspended in the fluid, providing there is sufficient bulk to cover its fundus. The time required for absorption depends on the bulk left within the abdomen and the posture. There is a normal force in the peritoneal cavity which carries fluids and particles toward the diaphragm. This current, however, can be favored or retarded by position. Since the ratio of absorption between the diaphragm and the pelvis is largely in favor of the diaphragm, it leads us to favor gravity to the pelvis when delayed absorption is desired. The keeping apart of the surfaces inclined to appose should be sufficiently long to permit the thorough cleansing of the surfaces of the exudate, the controlling of the leaking vessels and a probable partial repair of the endothelial covering. Just how much time is required for the repair of the endothelial covering is not definitely known. No doubt it depends much on the area of the surface denuded and the extent of the destruction. It is reasonable to assume that this repair is rapid when we realize that peritoneal approximation requires but a few hours. It is most likely that repair takes place without cohesion of apposed surfaces providing serum exudation is not present. It is likely that the amount of solution used is taken up in from twelve to eighteen hours. The observation on the absorption of the rabbit's peritoneum leads me to this opinion. Contrary to Klapp's conclusion that adrenalin delays the absorption of particles by the peritoneum, my observation on the rabbits proved that salt solution with adrenalin was more rapidly taken up than was the plain salt solution.

METHOD OF APPLICATION.

When adherent surfaces have been separated, as in the removal of pus tubes and the like, or when a plastic peritonitis has been active, the surfaces are cleansed and dried as much as can be consistently done in conserving time and the minimum traumatism. The adrenalin salt solution is placed in contact with the oozing surface.

A glass irrigating nozzle attached to a rubber tube leading from an elevated reservoir is placed at the bottom of the surface requiring attention. While the solution is slowly flowing, the peritoneal incision is closed, leaving open only the space occupied by the tube which is removed when the desired quantity of the solution has entered the abdomen and pelvis, then closure of the peritoneum is completed. The remainder of the toilet of the operation is as usual in abdominal section. The strength of the solution is: adrenalin chlorid solution one dram, normal salt solution one quart. This makes approximately adrenalin chlorid in salt solution 1 to 50,000. The temperature used ranges from 100 to 110 F. The quantity employed is dependent on the size of the cavity and extent of adhesions; from 500 c.c. to 1,500 c.c. is usual.

This technic is followed without perceptibly increasing the length of the operation. Barring those cases of hard arteries or cardiac diseases with loss of compensation, the fluid enters the circulation, a factor of great aid in supporting the heart, warding off shock, stimulating the kidneys and reducing thirst.

CONCLUSIONS.

To prevent peritoneal adhesions the exudate should be removed. The exudate necessarily left on the surface of the peritoneum is best cared for by absorption. Because of its active absorbing nature, the peritoneum can take care of it. It is more easily absorbed when in solution, and normal salt solution is most efficient for this purpose. Subsequent exudation should be prevented. By its action on the vasoconstrictors, adrenalin chlorid shuts off leakage. Surfaces deprived of the endothelial covering should be kept separate. By its bulk and gravity the solution is utilized for this result.

DISCUSSION.

DR. F. F. SIMPSON, Pittsburg, Pa., thought that the most important factor in the prevention of adhesions, especially in inflammatory conditions, is to delay the operation until the pus within the abdominal cavity has become sterile. Primarily, a small number of bacteria caused considerable inflammatory reaction. They produce symptoms during the acute attack, which clearly indicate their virulency. Therefore, Dr. Simpson said, one can expect a very considerable peritonitis to follow operation. If operation is deferred until the pus is sterile, inflammatory reaction is not nearly so likely to occur. That, in his judgment, is the most important prophylactic measure in the treatment of adhesions. Next to a wise choice of time for operation, the complete covering of all raw surfaces by perfectly healthy peritoneum will prove of most value.

DR. J. L. ROTHROCK, St. Paul, Minn., was much interested in the paper, because it deals with a condition which every operator has been endeavoring to avoid—the formation of adhesions. He said that many theories have been advanced in explanation of the cause of adhesions, and great stress laid on the presence of foreign bodies within the peritoneal cavity, such as sutures and raw surfaces, as factors in their production. There is no doubt, he continued, that as surgical technic has been perfected these adhesions occur less frequently than formerly. German observers have recently taken up this subject with renewed interest, and have endeavored to demonstrate by experimental pathology the real etiologic factors. There is no question of doubt that where raw surfaces are left behind, adhesions are more likely to occur. Panchow lays great stress on the presence of blood in the peritoneal cavity as a factor in the formation of adhesions. Recently Fromme, from a large series of experiments on lower animals, concludes that infection is the most important factor. First of all, he found that if he produced raw surfaces by denuding the viscera of their peritoneum, if done under strict aseptic precautions, no adhesions formed. Likewise, in the absence of infection, any blood contained in the peritoneal cavity was quickly absorbed, if not present in too large quantities. He found, further, that the introduction of pathogenic bacteria not sufficient to kill the animal, was in many instances attended by the formation of adhesions. If, on the other hand, he introduced pathogenic bacteria into a peritoneal cavity in which there were raw oozing surfaces, albesions almost invariably resulted. Dr. Rothrock thought that while Dr. Marvel's theory was an ingenious and attractive one, it would be necessary to make a large number of practical experiments on lower animals to demonstrate that the presence of adrenal salt solution will prevent the formation of adhesions. In regard to the difference in results from the employment of moist or dry asepsis, he stated that the observations of Walthard and Uhlman show that neither method possess a marked influence in preventing the formation of adhesions.

DR. F. F. LAWRENCE, Columbus, Ohio, was of the opinion that postoperative adhesions occur less often than one is led to think from the average discussion of the subject. Again, if the causes of postoperative adhesions are studied carefuly, these adhesions will occur but rarely. Dr. Lawrence said that if it is thought necessary to make an incision as long as the moral law, insert metal retractors and pull and push, batter and bruise the tissues, turn the patient upside down, in the so-called Trendelenburg position, thus interfering with the action of the diaphragm, turn the patient so that every person present may see what is being done, and then pack into the abdomen four or five yards of gauze to traumatize the peritoneum, no surprise need to be expressed at the occurrence of adhesions. If, he continued, the surgeon will practice careful, clean surgery, avoiding traumatism, leaving no raw or denuded surfaces, avoiding washing out the abdominal cavity, when possible, and when he does wash out, not try to scrub with everything in the chemical catalogue, but use clean water, there will be fewer adhesions. To establish drainage, he advised the use of glass, rubber or aluminum tubes, and condemned packing in a lot of gauze and calling it drainage. When surgeons cease unnecessary flushing and mopping, when they stop the need of these by minimizing traumatism, when they make the smallest incision, one which will not permit the extrusion of the viscera around the field of operation, and when they cover raw surfaces, comparatively few postoperative adhesions will occur. Dr. Lawrence considered the author's theory an ingenious one, but thought that not enough is known about the action of such a drug as adrenalin to justify placing it within the abdominal cavity. He would prefer to take the chances of having postoperative adhesions occur rather than to have adrenalin placed in his abdomen. Finally, he does not believe that the organization of serum into adhesions is very apt to occur. On the contrary, he thinks that the serum has a prophylactic action, and that the normal salt solution is simply an artificial serum. The adrenalin added may, he thought, make some difference.

DR. H. G. WETHERILL, Denver, Colo., has long believed that in arguments such as these the profession has proceeded from a wrong premise. He maintains that within certain limitations adhesions are conservative, and that no abdominal operation which may be done, certainly none for pathologic conditions such as may arise from an infected appendix or infected tubes, can be done without a residium of infection. The result in that case depends on the relative amount of resistance of the patient, on the one hand, and on the degree of infection on the other. If that is true, he said, the success of the operation depends on the localization of the infection. If the infection is to be localized it must be localized by exudates or adhesions. Furthermore, he continued, no adhesions in the peritoneal cavity would be likely to be lasting or to produce obstruction, unless the endothelium were destroyed. If the endothelium is destroyed and any of the hollow viscera are injured, then there arises the danger of a perforation occurring, against which the adhesion is prophylactic and protective, and surgeons are proceeding in the wrong direction if they undertake to prevent that. Dr. Wetherill deemed it advisable to take every possible pains to prevent abrasions of the endothelium and to cover raw surfaces (particularly to cover the under side of the scar), leaving a smooth peritoneal surface without abrasions, and to do as little within the peritoneal cavity as is consistent with complete work. The patient's chances of recovery would be improved by such a method of procedure. That is the course he has followed for five years and he has been satisfied with it. Dr. Wetherill was convinced that the very free use of salt solution in the peritoneal cavity has its dangers. He was also in doubt whether he would want adrenalin extract used in his peritoneal cavity or that of any of his patients under these conditions, because we are not at all sure we are doing harm in this way. Dr. Crile, he said, has shown that a patient may be actually drowned by the too free use of salt solution, that pulmonary edema may be produced and very great harm done. Considering all things, Dr. Wetherill was convinced that Dr. Marvel in making the suggestions he did, proceeded from a wrong basis.

DR. DANIEL H. CRAIG, Boston, said that no one who has undertaken an operation for the relief of symptoms due to well-organized adhesions will doubt that it is, perhaps, as disagreeable and tedious an operation as the surgeon is called on to do. Therefore, the importance of preventing unnecessary adhesions is paramount. Regarding conservative adhe-

sions, he stated that there is no question whatever that absolute asepsis in surgery is never obtained. It is also undoubted that surgeons are always to use the utmost precaution to keep that dose of septic material at the minimum. The only point is keep that dose so low that it will not seriously affect the patient. That this dose is kept so low that conservative adhesions to wall it off are not necessary, he thought is demonstrated in those cases in which, for one reason or another, the abdominal cavity has been opened subsequently and no such walling off by adhesions was found. Dr. Craig believes that in the great majority of cases of so-called clean surgery, where one feels that he has completely controlled the original focus of inflammation, we are better off without adhesions, and that we are not doing full justice unless we do all we can to prevent the occurrence of such adhesions. For a number of years he has been eliminating, absolutely, from the operating room all sorts of chemical disinfectants, with the exception of 60 per cent. alcohol, for the use of his hands. Unless there is a very good reason for doing so, he deems it a mistake to resort to the use of chemicals within the abdominal cavity. It is known, he said, that the use of adrenalin to control hemorrhage in various other parts of the body or to contract vessels is followed by a reaction. As the action of the adrenalin wears off, the blood vessels which have become constricted become dilated beyond their normal size, and a hemorrhage is likely to occur where it was suppressed by the use of adrenalin. Dr. Craig thought that in using a substance like adrenalin in the peritoneum, the occurrence of the exudate is postponed, and that, therefore, the adrenalin might achieve postponement rather than prevention.

DR. C. C. FREDERICK, Buffalo, has used normal salt solution in hundreds of cases for flushing the abdominal cavity after abdominal section, but not for some years past. Prior to that time, for a number of years, he used it in every case of abdominal section with the idea of preventing adhesions, using plain normal salt solution. He now considers its use wrong in principle and wrong in practice. He does not believe that it prevents adhesions in any degree whatsoever. He has had occasion to reopen the abdomen of patients, and he does not believe that he has seen any fewer adhesions in those cases in which he used normal salt solution freely than in those in which he used the entirely dry method. He believes, further, that infection and trauma, and the leaving of blood in the peritoneal cavity, etc., are the predisposing causes. As to the use of adrenalin, some few years ago when adrenalin first came out, Dr. Frederick saw Dr. Roswell Parke of Buffalo using it on the stump of an amputated limb while there was free oozing from the capillaries. Sometimes deep down in the pelvis there are inflammatory adhesions, especially where there is a low grade of infection and much free, persistent capillary oozing after separating adhesions. It is most difficult to control this oozing. There are no perceptible vessels to tie or stitch, but a general capillary oozing. In that class of cases Dr. Frederick uses adrenalin and he has used it, probably, in 50, 75 or 100 instances. It controls the bleeding promptly. The adrenalin is used in the strength of 1-1,000. He has seen no untoward after effects and has no hesitancy in using it or recommending its use for such a purpose.

DR. D. TOD GILLIAM, Columbus, Ohio, considered Dr. Marvel's method a very ingenious one to prevent adhesions by keeping the parts separate from each other. Such an arrangement will absolutely prevent adhesions, he said, if one can keep the parts separated, but he feared that in practical use it will not be as satisfactory as hoped for. Quite recently he saw a patient who had been struck in the abdomen. There was rupture of the bowel and the abdominal cavity contained fluid. All through the abdomen and over the intestines there was a large quantity of lymph. Dr. Gilliam has a number of times had occasion to open the abdomen subsequent to operation, where we had left the normal salt solution, and found the peritoneal surfaces, here and there, covered with lymph, showing that it was ready for work wherever the parts were brought together. For that reason he is skeptical as to the value of the salt solution to prevent adhesions.

As to the prevention of the osmotic action of the intestines and peritoneum by the use of adrenalin, Dr. Gilliam recalled that only recently some very exhaustive observations and experiments were made on the absorptive power of the peritoneum that revealed the fact that there was very little absorption on the part of the peripheral or visceral peritoneum this side of the diaphragm. These experiments were made with bacteria and with other substances, and it seemed to be demonstrated beyond cavil that absorption of the peritoneum below the diaphragm was very small. Any trouble confined to the pelvis is not so dangerous because of the absence of this absorption. Dr. Gilliam is a believer in the idea that the important cause of adhesions is sepsis; that there is septic material there; that there are germs that produce this, and that the adhesions exert a conservative influence by walling off this septic matter and these germs from the general peritoneal cavity. He would fear to prevent these adhesions, even if it were possible to do so, by putting fluids into the abdominal cavity when he knew that sepsis was present. Of course, he said, in the case of pathologic conditions, which persist long after the operation has been done and which are producing mischief, that is a different thing. But to make a routine practice of putting fluids into the abdominal cavity for the purpose of preventing these adhesions, he thought would make the loss greater than the gain. Dr. Gilliam does not use adrenalin so much as he did, because it is almost useless in active hemorrhage, even of the smaller vessels. He has found it effective to check capillary oozing.

DR. D. F. MONASH, Chicago, stated that if the technic is simple, and if the surgeon gets in and out of the peritoneal cavity as quickly as possible, not using a drainage tube per abdominal wound, nor gauze, nor fluids to become absorbed, the minimum amount of trauma is produced. If pus is present, either drain per vaginam or wait until the peritoneum becomes more or less sterile, doing the operative work from above or delaying the operation until the pus is sterile. The surgeon's best friend, he said, is the sigmoid flexure. If the sigmoid flexure is brought over in contact with the cul-de-sac or the peritoneum of the pelvis, it will tend to a slow absorption. It will keep the intestines out of the pelvis and will obviate the necessity of using a solution to fill the peritoneal cavity. Dr. Monash thought the use of any fluid in the peritoneal cavity was a thing of the past. The adrenalin, he said, counteracts shock by being an artificial contractor. The shock is overcome relatively, if not absolutely, in operative work by the use of normal salt solution in the bowel. The continuous use of normal salt solution per rectum, with moderate stimulation, is so useful to overcome shock, that now, in hospital work, comparatively few cases of severe shock occur. It is said that if the normal salt solution is used continuously, with the can a foot above the bed, and the solution running constantly toward the patient, day and night for twelve or twenty-four hours, shock is absolutely overcome. To the first few pints run toward the patient—one pint running every two hours—30 to 40 drops of adrenalin are added. By introducing adrenalin solution with normal salt solution, the zone of infection is spread, and if the pelvis is allowed to control the infective product, the absorption being slow, more is gained by keeping the zone contracted than to increase it.

DR. S. STRAUSS, New York City, referred to a case of intestinal obstruction in which the gut was so matted together that each loop had to be cut away with scissors. The patient was operated on in a private house. Fearing that the intestines would become glued together again, he filled the abdominal cavity with salt solution, and, much to his surprise, the patient made a complete recovery without any adhesions forming. The case was especially interesting, as the etiologic factor was never discovered though thought to have been a typhoid perforation and ulceration of the intestines occurring some time previously. On account of the density of the adhesions, the condition was not accompanied by any tympanites. The abdomen was entirely flat, as everything was glued together tightly. In such a case Dr. Strauss considered the use of salt solution justifiable. In former years he tried sterile olive oil to prevent adhesions, but now that he covers

in all raw surfaces he finds it unnecessary. In regard to leaving one dram of adrenalin solution in the abdominal cavity, he said that he has used as much as 30 minims intravenously in a case of shock.

DR. EMORY MARVEL, Atlantic City, N. J., said that the covering of the normal peritoneum is most desirable, provided it is normal. In other organs, such as the sigmoid, he doubts its efficacy because it is disturbing an organ which is transplanted. The delayed operation spoken of by Drs. Wetherill and Simpson he thought is not so pertinent as in those cases in which peritonitis takes place; for instance, in a case of acute suppurating appendicitis, in which there exists an exudate and plastic condition around the appendix and adjacent viscera. It is in such cases that he would apply the term peritonitis. In cases in which there has been a local change and that change must be removed, as in pus tubes and the like, where one can not secure sufficient normal peritoneum to cover the surface, there is no alternative but to transplant some organ or curette the condition where the oozing surfaces exist. As to the use of adrenalin, he said, when one application of adrenalin is made, it is efficient and quick to yield, but if a second application is made, the action becomes more prolonged and the same is true after each successive application. With the continuous application of salt solution, plus adrenalin, there will be a tonic control of the vessels which will be very slow in yielding. One thing he thought is an error regarding the physiologic action of adrenalin which has been eliminated in recent investigations. Where there is this delayed action in the control of blood vessels, there is a more relaxed condition than existed before its application. The hemorrhage comes back, not because there is more relaxation, but because the action of the adrenalin has passed. Consequently, if the blood vessels are kept under its control for a sufficient length of time there will not be any return of hemorrhage. In one of his cases from which the appendix had been removed, and there were general adhesions, which made it seem almost certain that adhesions would recur, adrenalin was used. Subsequently there was ventral hernia, to correct which gave an opportunity to investigate the condition, and there were only two points at which adhesions had recurred.

PRACTICAL POINTS OF ECONOMY IN HOSPITAL CONSTRUCTION.*

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CHICAGO.

The matter of economy in the construction of hospitals has come to be of the greatest importance in every part of this country, because these institutions are now an absolute necessity, not only in the great cities, but in every community.

No town of more than one thousand inhabitants should be without its hospital, because these smaller towns contain all other necessities desired by intelligent, educated people. They usually have excellent schools and churches. The water supply is good and there is ample fire protection. The inhabitants of these towns are people of refinement and education, who, together with the population of the surrounding farming communities, make up the most valuable portion of the population of this country. These people must, for many generations to come, supply the physical, mental and moral stamina of this nation and are entitled to all the modern facilities.

It seems that in civilized communities, approximately one hospital bed is required for every one hundred inhabitants, which would result in nearly one million of hospital beds in this country.

In order to justify further the choice of my subject it may be well to refer to two hospitals that were built during the past year, each one being fireproof in construction and admirably arranged for the care of sixty patients, the one costing $1,000,000 and the other only $60,000.

The chief difference in the working capacity of the two institutions consists in the fact that, as a result of the complicated arrangement of the former and the correspondingly simple arrangement of the latter, it will cost approximately twice as much to give equally efficient care to an equal number of patients in the former institution.

It is to be borne in mind that this does not in any way result in greater benefit to the patient cared for in the former institution. In fact, there are several points in which the patients of the latter institution have a distinct advantage. In the matter of being served with food that is hot and palatable, for instance, the patients in the second institution are better provided.

It will be seen at once that many communities must go without hospital facilities altogether unless these can be secured at a reasonable cost. This applies as well to the cost of maintenance as to the cost of construction. Indeed, it has occurred only too often that all the available money has been expended in the construction of an unnecessarily expensive building, leaving nothing for the maintenance of the institution when completed.

In the instance just mentioned, had a building been erected at the cost of $100,000 instead of $1,000,000, there would have been left $900,000 for a maintenance fund, the interest of which would amount to about $100 per day, an amount quite sufficient to defray all necessary running expenses.

With an expenditure of $100,000 according to the general plans employed in the construction of the $60,000 hospital, it would have been possible to supply an abundance of ornamentation and mural decorations as well as tile and marble work wherever indicated to supply all esthetic demands which might be considered reasonable. I wish to state at this point that the $60,000 hospital is really very beautiful.

It is plain, from a glance at these facts, that it is well worth while for the physician and surgeon to give this portion of the subject his careful attention. This applies more especially to the smaller communities, because these will be unable to secure the large sums required for the more expensive plans which are usually provided for the large cities by some very wealthy philanthropic individuals. These philanthropists can but rarely be found in the smaller communities.

In order to illustrate these points of economy in hospital construction, Mr. M. J. Sturm, of Chicago, hospital architect, has prepared the drawings of hospital plans for me which are here illustrated.

The first element in economy can be obtained by the construction of a compact building, as shown in Figures 1, 2 and 3. The second element lies in the central location of utilities, because of the reduction in labor required in conducting the institution. The third element of economy can be secured by building many-storied hospitals.

This feature should be discussed, first because it provides excellent facilities for developing the other two elements. In constructing any building one must look on the following parts as units of cost of construction:

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

The foundation and the basement represent one unit of cost; each story represents an additional unit, and the roof and garden represent one unit. This can readily be illustrated in the following manner: In constructing a six-story hospital the cost of construction represents one unit for the foundation, one for the roof and garret, and one unit for each story, making eight units in all.

In constructing six one-storied pavilions, on the other hand, each pavilion would represent one unit of cost for the basement, one unit for the first story and one for the roof and garret, making eighteen units of cost in all. In other words, the same facilities could be secured in the six-storied building at eight units of cost that would require eighteen units of cost were six one-storied pavilions constructed. This, however, is true only of hospitals in which each pavilion contains at least twenty beds.

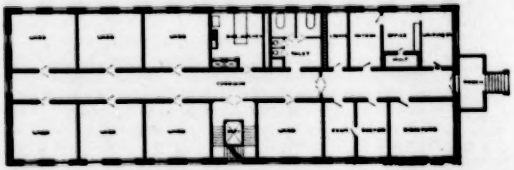

Fig. 1.—Ground floor plan of a compact hospital building.

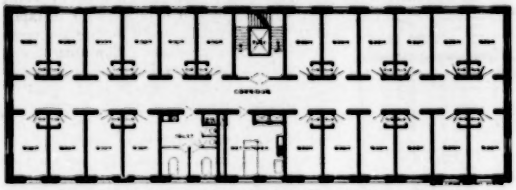

Fig. 2.—Second floor plan of building shown in Figure 1.

Figures 1, 2 and 3 represent plans of the various floors of a hospital suitable for smaller cities of this country or for comparatively small church or society hospitals in large cities. Each floor will house twenty-two patients in private rooms (Fig. 1) or forty patients in wards (Fig. 2). By lengthening the building at either end its capacity can, of course, be increased to suit requirements. The same increase in capacity can be obtained by increasing the number of stories.

The principal features which tend toward economy in this instance are the concentration of the conveniences in the middle portion of the building. The elevator, the nurses' service room and diet kitchen, the bath and toilet rooms are all located in the center of the building where they are convenient so that the distance the nurse must travel in going to and from each patient is reduced to a minimum, and, although these conveniences provide every facility, they occupy only a comparatively small portion of the building, leaving a very large percentage of space for the housing of patients, which, of course, serves as a great economy.

By superimposing these bath and service rooms the expense of installing the plumbing will be reduced to a minimum. It will be seen that the diet kitchen on each floor is directly underneath the general kitchen and special diet kitchen for the entire hospital. This makes it possible to serve all food, hot and palatable, at a very small expense of labor. The distance which the food must be carried from the general kitchen to the most distant floor does not exceed sixty feet.

By placing the elevator as indicated in these drawings all the noise from this source will be eliminated and each floor will be an absolutely independent unit in no way disturbed by the patients on the other floors. The hall in this building must, of course, extend from north to south in order to be exposed to the noonday sun, while every room and ward is exposed to the sun during one-half of the day. A slight deviation to the northeast or northwest is perfectly satisfactory with this form of construction.

For a moment it may be well to compare these plans with another plan (Fig. 4) in which the hall extends from east to west and is placed along the north wall. This form of a pavilion has been frequently chosen because it gives every room a south exposure for sunlight. When one bears in mind the elevation of the sun during the forenoon and afternoon hours as compared to the noon hours it becomes plain at once that the total amount of sunning is far greater for all parts of a room facing either east or west than in a room in which the windows face south. I would refer those interested in this part of the subject to the exhaustive studies of Mr. William Atkinson.[1]

A comparison of these two types will show that in Figures 1, 2 and 3 the amount of utility is nearly double that shown in Figure 4 when measured by the cost of construction. Moreover, the distance it is necessary for the nurses to travel, the amount of hall space to be kept clean, the number of windows to wash, the amount of outer wall area and roof to be kept in repair are all increased greatly in a building constructed on the gen-

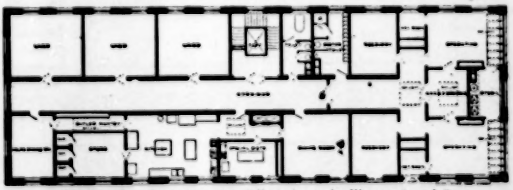

Fig. 3.—Top floor plan of building shown in Figures 1 and 3.

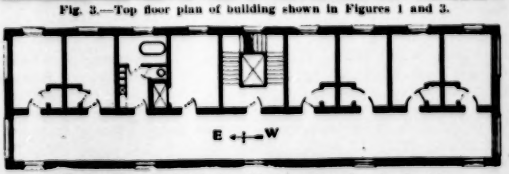

Fig. 4.—Plan of a hospital pavilion so arranged as to give every room a south exposure.

1. Organization, Construction and Management of Hospitals, The Cleveland Press, Chicago, 1907.

eral plan shown in Figure 4 when measured by the amount of utility obtained.

The type of building exhibited in Figure 5 contains a great amount of utility for the cost of construction and its concentrated form insures great convenience and at the same time conditions which will make its conduct most economical. Here, again, food can easily be delivered to the patients in all the wards and rooms of the building, hot, palatable and wholesome, because the distance from the kitchen in the top story to the portion of the building farthest removed is relatively very slight.

All provisions for carrying food a great distance after it leaves the kitchen are bad, whether this be done in heated carts or in any other way. The result is similar to a dinner which has been kept hot in the kitchen for some time after it is ready to serve.

It is best to place this building so that the parallel wings extend from northwest to southeast because this insures sunlight for every window in the building during the entire year at the same time each day. It is

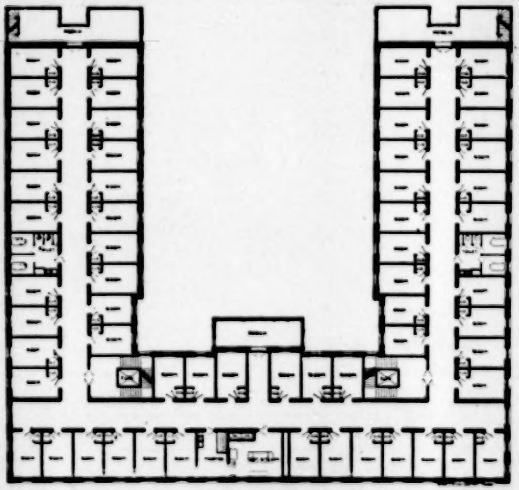

Fig. 5.—Plan of hospital of the U-shaped type, showing arrangement of rooms. On other floors wards are arranged in a similar manner except that a ward occupies just twice the space allotted to each room, thus giving each ward two windows.

proper, however, in case the location demands this, to have these wings extend from north to south because the end rooms along the north wall will receive sunlight from the east or west and the remaining portion of the space along the north wall may be used largely for utility rooms, such as kitchens, nurses' service rooms, dressing rooms, operating rooms, supply rooms and rooms with dark curtains for eye patients, and the elevators must be placed on this side. Moreover, from March 21 to September 21 even this wall is exposed to sunlight early in the morning and late in the afternoon.

In order to make this illustration more clear I will compare it with the best known hospital of the one- and two-story pavilion plan in this country, the Johns Hopkins Hospital. A comparison of the amount of wall, roof and hall space in these two institutions is most interesting because it will give a fair idea of the relative expense of keeping these various parts in order. This is especially true of hospitals built in the northern portion of this country where the heating of long corridors and other unused portions of the buildings amounts to a great sum during the year.

These measurements were taken from the published plans of the Johns Hopkins Hospital, the administration building, the pavilions containing patients, and the operating pavilions being included in these measurements because these are the departments contained in the U-shaped hospitals shown in Figure 5. The height of the ceiling was placed at twelve feet in both instances because this will insure approximately the same air space for each patient. Johns Hopkins Hospital was chosen because it is the first and best known of all the typical low pavilion plan hospitals in this country, and all other hospitals constructed on this plan are modeled to a greater or less extent after this one.

In both instances the roof area was calculated for flat roofs, because these are applicable to both forms of construction and they are the most economical form available. The area of the outer wall in the Johns Hopkins Hospital is approximately 312,569 square feet. That of the U-shaped hospital shown in Figure 5 is 69,680 square feet. The capacity of these two institutions is almost identical, the former having 378, the latter 384 beds. The amount of wall space is more than four times greater in the former than in the latter.

A similar comparison applied to the corridors in the two institutions brings a similar result. The former institution having approximately 105,000 square feet of corridor, the latter having in six stories a total of 22,600 square feet.

In comparing the roof area the proportions are still less favorable to the former as regards economy of construction, the former institution having a roof area of 148,000 square feet, while the latter has only 17,250 square feet of roof area or less than one-eighth of the area of the former.

If one considers only the three items of increase in expense of heating, cleaning and repairing, one must conclude that from the standpoint of economy in running expenses the second system is greatly to be preferred. This would, of course, not apply to hospitals in the tropics, but it would apply to those constructed in almost all parts of the United States and Canada.

Economy of construction would, of course, not be permissible were the resulting structure inferior in its quality of care to the patients. As a matter of fact quite the opposite is the case. The patients can be perfectly free from danger from fire. They can be readily isolated from noises. They are near the head nurse and the floor nurses. They are near the service and bath rooms. They are near the kitchen and still entirely away from the odors of cooking. Heating, lighting and ventilation can be arranged in an ideal manner.

It is possible to place such a building at a considerable distance back from the street and to screen it from the latter by planting shrubbery along the edges of the grounds.

It has been repeatedly demonstrated that the higher

floors of any building contain less street dust and consequently a relatively smaller number of micro-organisms in the air than the lower floors. The same is true of flies; only rarely are these found in the higher stories of a building.

If forced ventilation is employed it is possible to extend the air shaft intake above the roof of a many-storied building at a slight expense; hence all of the air supply from this source can be obtained from an elevation which will insure relatively pure air.

Moreover, natural ventilation which must be generally employed in the summer months in every part of the United States is always better higher up, because there is less obstruction from the surrounding buildings. Another element of economy depends on the possibility to deliver heat in all parts of the building with very little loss on the way.

No doubt these principles of economy will all be developed with the advent of more strenuous competition in hospital management, but it is well for those who build now to incorporate these features in their plans in order to be prepared for the competition which is as certain to come in this field as in every other field of human activity.

710 Sedgwick Street.

MODERN HOSPITAL CONSTRUCTION.*

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The modern idea of the construction of the general hospital building is that the building itself should bear a definite relationship to treatment, that it is more than a mere convenient form of lodging house for the sick, and that environment is a potent factor in the control of disease, often more powerful than the giving of pills and potions. One reason among many for this position is the lesson taught by tuberculosis, namely, that fresh air is not a specific for that disease alone, but acts through increas ng the resisting power of the organism. If this be true of tuberculosis, why is it not also true of many other diseases? Hence hospitals are built with almost as much ward space outside as inside the retaining walls, with wide verandas opening off every ward, and broad flat roofs for exercise, fresh air and sunlight.

Another reason is a demand for the intelligent classification of cases according to their special hygienic instead of mere medicinal requirements. Yet another reason is the widespread tendency to give fewer drugs and to employ more extensively the general non-medicinal aids to treatment, such as hydrotherapy, thermotherapy, etc.

The earlier view of hospital construction, which dominates most of the existing hospitals of this country, was that the hospital building is little more than a dormitory where a number of sick persons, having every conceivable malady, are placed in a series of long large wards, like a lot of sheep corrals, all of similar size and shape, and where they are gathered without the slightest regard to their individual peculiarities or different requirements of treatment, varied needs as to air, temperature, sunlight, quiet, etc. Could any arrangement be more irrational or, in fact, more uncomfortable than this?

Let me picture briefly from experience the inmates of such a ward: The pneumonia patient, with a temperature of 105 F., sorely in need of fresh, cool air, lies in the next bed to the uremic patient with a subnormal temperature and high tension pulse, who needs warm air and a hot pack! The typhoid fever patient, with a racking headache and photophobia, lies facing a glare of sunlight, which is doubtless beneficial to the man with pernicious anemia in the next bed, because the trained nurses think the ward looks better with the shades all at the same height. The neurasthenic with insomnia lies next to the patient with alcoholic cirrhosis and delirium tremens, who keeps the entire ward awake most of the night. The convalescent patient has nowhere to go during the day for a change of air and scene, and the poor old woman with a little chronic cough, who needs to rest in an easy chair toasting her feet at a heater, sits gazing wistfully and pathetically at a hole in the wall near the ceiling, where some architect (who never built a hospital before) has seen fit to place a hot-air register. The patient with fetid diarrhea and sixteen stools a day destroys the appetite of the patient with chlorosis in the next bed, and the patient with a neurotic tachycardia is cheered by the stertorous groaning of the moribund hemiplegic.

This sort of thing may be housing the sick, or boarding them, but it certainly is not treating them. I am not even certain that in the long run it is economical. It may appear so, to place as many patients as possible in a long large ward, because fewer nurses are required to watch them, and certain routine things like handing out wash-hand basins in the morning can be done more quickly than in smaller classified wards, but suppose it to be proved, as it often has been proved, that patients do not recover so promptly under such conditions as they do where they can have change of air and scene on roof-gardens, balconies, or in day rooms, sun-parlors, etc., or where they can sleep better and eat better if segregated from the depressing influences of the ward? Protracted convalescence of any patient is a serious economic disadvantage. Convalescents have no business in a mixed general hospital ward at any time, but when they are kept there, as they are in most of our hospitals, it costs as much per capita per diem to maintain them as when they are seriously ill, for the fact that they require less service is offset by the fact that their board is more expensive.

That these suggestions are not visionary but eminently practical is proved by what has been already accomplished in this country, and much may be done by the readjustment of old buildings. At the Presbyterian Hospital in New York City, for example, a model open-roof ward has been constructed on the flat roof by Dr. W. P. Northrup. It is capable of accommodating at least fifty patients, many of whom are kept there in the open air all night. A kitchen and lavatories on the roof make this practicable. A similar alteration is planned for St. Luke's Hospital in New York City, although the building was only completed a few years ago. In an admirable article on "Environment in Therapeutics" by Walter James,[1] which everyone interested in this topic should read, he explains what he has accomplished in two hospitals, the Roosevelt and Presbyterian, in New York City (both built many years ago) by such means as a liberal use of ward screens, tinting the walls and adapting shutters to make certain wards more reposeful for the very ill, securing different temperatures

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Amer. Jour. Med. Sci., November, 1906.

at opposite ends of a ward, etc. He says: "Thus, without the expenditure of any money and with no structural changes whatever, I was able to secure in one ward three different kinds of environment and kept the patients distributed in accordance with the nature and progress of their complaints."

The new Bellevue Hospital is being constructed with large verandas opening off of each ward, designed for the continuous treatment of certain classes of patients in their beds in the open air.

I spent last summer in Continental Europe studying hospital construction and found that a veritable hospital renaissance is everywhere in progress, especially in Germany, but also in Italy and France, where it has developed during the past decade. It is no exaggeration to state that many of these modern hospitals are structurally a generation ahead of any at present existing in this country.

THE POLICLINICO OF ROME.

For example, the Policlinico Umberto Primo in Rome (Figs. 1 and 2), which is one of the finest hospitals in the world, possesses forty-four separate pavilions, covering forty-five acres of ground within a short drive of the Colosseum (Fig. 1). The capacity is 1,000 beds and the buildings, which are of a light stucco, and are connected by open corridors, are most attractive in design (Fig. 2). The two-story ward pavilions open on to the extensive grounds, which are planted with pines, oleanders and palms. There is a large separate building for hydrotherapy, and another for the pathologic department, fitted up with laboratories, animal rooms, etc. There is a separate building for each of the important special services, such as gynecology, diseases of the eye, etc. A well-lighted subway conveys the water and heating pipes and a track on which delivery cars carry the food from the central kitchen to the wards.

VIRCHOW HOSPITAL.

In Berlin three of the finest hospitals, all within the city limits, cover collectively 124 acres of ground. The largest of these, the Virchow Hospital (Figs. 3, 4 and 5), which was opened last year, was ten years in building, and so much forethought was exercised that rows of trees were first planted to form avenues between the ward pavilions (Fig. 4), which now, by the time the buildings are opened, afford massive shade. The hospital comprises fifty-three separate buildings, laid out on broad avenues which are further adorned with shrubbery, flowers and fountains, and supplied with benches, arbors and shelters for the patients. The total capacity of the hospital is 1,650 beds for patients and 550 more for the staff, nurses and attendants, 2,200 beds in all.

In addition to the one and two-story pavilions for the sick there is a separate building for each of the following purposes: A lay-director's house, two medical directors' houses, administration building, nurses' home, kitchen, laundry, workshop, pathologic department, animal experiment house, wagon house, disinfection building, gymnasium, chapel, icehouse, water tower, filtration plant, crematory, bathhouse and power-house. All these buildings constitute practically a small village, and the instructions given regarding them to the architect by the trustees state that "The buildings should be of simple rather than ornate construction, but should be designed to make a pleasing impression in form and color on the inmates for whom a cheerful environment is an important consideration." The motto suggested for the entrance archway might well be placed over many another hospital: "While treating the disease do not omit to treat the man."

The cost of this most complete institution was only $2,250 per bed, which, with due allowance for cheaper building in Germany, compares favorably with the $2,500 or $3,000 rate which is common in this country. The wards have arched ceilings, a favorite modern type for the one-story pavilion, which is not only attractive, but favors ventilation by giving varied direction to air currents. The windows are of casement type, with transoms at the top, an arrangement which admits of directing the air currents at will, and has other advantages over the cumbersome heavy sash type of window which prevails in this country, and which latter is often too heavy for the nurses to lift unaided. The ward floors are of terrazo. The heating pipes are placed in front of certain of the windows, and each ward has its independent steam disinfection apparatus for clothing and excreta. There are many small rooms for delirious or other patients who need isolation, either for their own good or that of the other patients. Attractive day rooms are used during inclement weather by such patients as are able to be out of bed, while in fair weather they have easy access at all times to the pleasant grounds.

The wards are built on the desirable "unit" plan which permits indefinite extension (Fig. 5), i. e., each pavilion consists of two one-story wards, joined by a two-story service group of rooms, containing the ward lavatories, diet kitchen, linen closets, disinfection apparatus, bathrooms, and rooms for a member of the house staff, and also for several nurses. In the four largest pavilions are separate clinical laboratories. Each ward unit, moreover, has a room for storage of such appliances as water beds, portable bathtubs, splints, etc., as well as ward-cleaning utensils (which in this country is apt to be remembered after the hospital is built).

The bathhouse in this, as in other foreign hospitals, is a model of completeness, and forms a striking contrast to the arrangement in our own hospitals, which is likely to consist of a single tub for a ward, usually placed in a water-closet (!) and constituting a feature as unhygienic as it is unesthetic. The Virchow Hospital bathhouse is completely fitted not only for purposes of cleanliness but for scientific treatment. It contains Roman, Turkish, hot-air and electric light baths, sand baths, baking appliances, carbonic acid baths, showers and douches of all kinds, with proper adjustments for regulating water pressure and temperature, besides a large plunge bath and massage rooms. There are also inhalation rooms for treatment of respiratory diseases, and an extensive electric department for the Roentgen-ray, Finsen light, etc. In many American hospitals the patient with chronic rheumatism, who is so unfortunate as to be in a hospital, is put to bed and given potassium iodid, perhaps, whereas what he really needs is a proper system of douches, sweatings or "baking," combined with skilful massage, and regulated exercises.

This applies to a very large number of ordinary ward cases of varied type, such as chronic rheumatism and gout, arthritis deformans, neurasthenia, anemias, chlorosis, tuberculous joint cases, gonorrheal and other forms of chronic sepsis, many forms of digestive disorders, many diseases of the nerves and muscles, such as ataxia, myasthenia, etc., and many varieties of chronic surgical conditions. To keep such patients in bed or confined to the depressing influences of a large general ward, without change of air temperature day and night, without change of scene, without access to a heater if they need

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it, or to an open window if they need that, without any opportunity for exercise, either active or passive, in fact without any treatment other than the necessary food and lodging and medicine (which latter they often do not need), to keep them thus is the common practice in many of our hospitals, but it is a long way removed from accomplishing scientific treatment through a maximum use of intelligently adapted hygiene and environment.

THE MOABIT HOSPITAL.

In the Moabit Hospital in Berlin are many illustrations of the extreme thoroughness with which structural details are carried out in Germany. Perhaps, it may be said, such details are unnecessary, and in some instances they seem to us almost absurd, but they do no harm and are at least preferable to the careless and even ignorant way in which hospitals are still sometimes being built in this country, with impossible Mansard roofs, entire lack of balconies or any place where patients can obtain fresh air or exercise, and with that most pernicious of so-called "closed ventilation" systems, whereby air, cooked or roasted to 400 degrees Fahrenheit over superheated steam coils in the basement is supplied day and night at the uniform temperature of 70 degrees to the languishing patients in the wards above, where the windows are kept tightly closed from October to May, while the trained nurses are given theoretical lectures on "how to ventilate the sickroom!"

Fig. 1.—General view of the Policlinico, Rome; contains 1,000 beds, consists of 44 separate buildings and covers 45 acres.

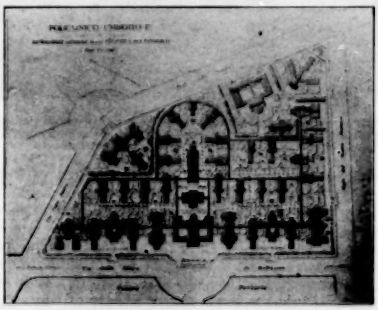

Fig. 2.—Ground plan of the Policlinico, Rome, showing pavilions, subways and connecting corridors. Front, center, administration. Front, right and left; medical, surgical and specialist services. Rear, left; gynecology and obstetrics. Rear, extreme right; isolation wards and, left of them, pathology. Center; power house, kitchen and bath house.

I have instanced the Moabit Hospital as illustrating amusing details. I saw there, for example, a large tank in the kitchen, where fish were kept alive to have them fresh for the patients; in the laundry was a separate rotary washing drum for almost every kind of article, the towels being washed together in one, the nightgowns in another, etc., and to each was attached a clock and automatic bell which rang to call attention when the clothing had been washed long enough. Adjoining the kitchen-maids' dormitory was a peculiar arrangement of plumbing in their lavatory, consisting of special traps to catch the loose hair when they washed their heads and prevent it from clogging the pipes, which was surely better than having it fall into the soup! There were also electric heaters for their curling irons. This hospital cures its own hams, and there were more than a ton on hand in cold storage. The hospital has a large therapeutic gymnasium, and in a schoolroom off the childrens' wards classes are held three times a week. The Moabit, which comprises forty-five separate buildings for all purposes, covers twenty-three acres, and was built for about $2,500 per bed. The maintenance cost is only 80 cents per capita per diem.

PARIS HOSPITALS.

In Paris similar progress is being made in hospital construction, and hospital buildings are being erected from the standpoint of treatment. It is true that many of the older hospitals in Paris are both shabby and dirty, but the Assistance Publique has voted, within the past two years, $9,000,000 for reconstruction, and many new pavilions of admirable design are in process of erection.

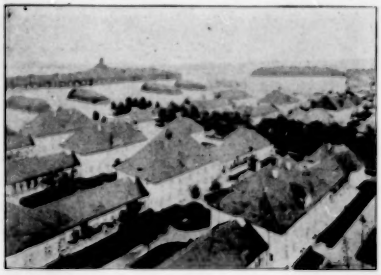

Fig. 3.—General view of the Virchow Hospital, Berlin, which was opened in 1906. Consists of 53 separate buildings, contains 1,650 beds and covers 68 acres. Showing the one-story pavilion connected by two-story service buildings. Large building in background with cupola, administration building.

The Boucicaut (Figs. 6 and 7), a modern hospital of 250 beds, is built with one-story pavilions with arched ceilings and a solarium at the end of each ward. An underground passage is used for the service of all food and ward supplies from the central kitchen and storerooms. The grounds are attractively laid out with inner courts adorned with trees and shrubs, and arbors with lounges and easy chairs accommodate many patients. This is one of the best types of modern hospital structure on the continent, and the administration cost is $1.00 per capita per diem. Another example of advanced hospital construction in Paris is the Hôpital d'Enfants Trousseau with a bed capacity of 234 and covering nearly five acres.

Throughout this country there is at the present time extraordinary activity in hospital construction. A glance at the *National Hospital Record* for two consecutive months of the present year showed references to the projected erection of fifty-five hospitals, or large additions to existing hospitals, in all parts of the country. How important it is that these buildings should conform to the advanced practice of therapeutics and applied hy-

giene, which is the dominating idea in modern medicine, and yet how few of them do. There are notable exceptions, instance the new municipal hospital in Cincinnati, but in New York a large hospital was opened within a year which, from the point of view under discussion, was fully thirty years old the day it was born.

I can not here enter into a full discussion of the relative merits of the many-storied single building, versus the low pavilion multiple unit type, which was the type of our cheap barrack hospitals in the war of the Secession and in the Cuban war, and which, curiously enough, gives rise to-day in Europe to the description of the prevailing type of pavilion structure as "the American type." The only valid arguments for the many-storied building or "sky-scraper" hospital are in the cheapness of ground cost and alleged facility of administration. A few such hospitals of moderate size, say 200 beds, may be required in the heart of a densely populated city for the reception of emergency accident cases and such very acute diseases as pneumonia or cases of medical hemorrhage which do not bear transportation well. It is no doubt easier for the superintendent to step on an elevator and inspect a ward on the seventh floor than to walk to a distant pavilion and it will take him less time, but with a properly arranged unit system each one- or two-story pavilion is made so far independent

Fig. 4.—Central avenue of the Virchow Hospital, Berlin, showing trees planted before buildings were begun. Administration building in center.

that only a few of the higher hospital officials who are not duplicated in a hospital are inconvenienced.

The cheaper ground cost of the "sky-scraper" is offset by the much cheaper construction of the low pavilion, which needs no heavy foundations, fewer iron girders and elevators, and much less complicated machinery to run it. The superiority of the multiple pavilion plan is the very great advantage that the units need not be all constructed at once, and that they can be changed in form to meet advances in medical treatment. New units may be added whenever the population increase demands them: they have only to be connected to the central power house by a subway and with the administration building by a corridor. Pavilions temporarily not needed may be closed or placed out of circuit. Hence the initial cheaper building cost of the pavilion may be made to offset their greater ground cost, and if the pavilions be placed where they should be—near the outskirts of a city, where good air and light and quiet are obtainable—the land need not be too costly.

It is most unscientific to plan the location of modern hospitals in large cities on the basis of population density solely, i. e., to place large hospitals where the crowding is greatest. A few ambulance emergency stations of a half dozen beds, a few moderate sized hospitals (not above 200 beds) to receive emergency cases in the center of the city, and then a large pavilion hospital for treatment in the suburbs, with perhaps a convalescent home hard by—this should be the broad scheme for hospital development in large cities. The unique advantages which the pavilion unit type of buildings offers are difficult if not impossible to secure in the multistory type, where ground area must be greatly restricted. Such are: The numerous small wards, day rooms, ease of access to the hospital grounds, and unrestricted space for the various hygienic accessories described above.

Following are the conclusions formulated to emphasize the dictum that the modern hospital should be adapted in structure throughout as an all-important factor in the *treatment* of the patients.

1. *Small Wards.*—In addition to the ordinary wards of medium size there should be numerous rooms to hold from one to four patients, to admit classification, according to their special needs as to air, light, temperature, quiet, etc.

2. *Day Rooms.*—These should be furnished for all such patients as are able to be out of bed, where they may obtain change, diversion, receive their visitors, and while themselves removed from the depressing influences of constant association with the very ill or dying, leave the latter in greater quiet and with better air to breathe.

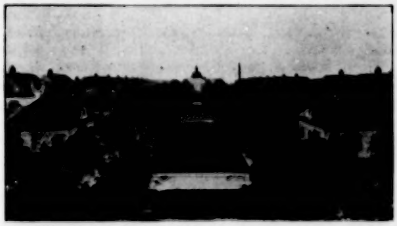

Fig. 5.—Virchow Hospital, Berlin. Central avenue leading to administration building and flanked by pairs of one-story pavilions, each pair joined by a two-story ward service structure.

The three important therapeutic influences of repose or quiet, regulated exercise, and change of scene and air, are usually ignored in our general hospitals and regarded as luxuries of the rich to whom they are constantly recommended. It is taught that typhoid fever and pneumonia patients should be left in absolute quiet, but the common practice is to place them in a ward with twenty-four other patients facing a glare of white light, with nurses constantly passing to and fro, and then during visiting hours to admit an average of two visitors to each patient, or fifty outsiders in all, who talk and move about and pollute the air. In a ward with twenty visitors sitting for an hour, with four nurses and two doctors in addition, I found through analyses made for me by Dr. C. G. L. Wolf that the carbon dioxid contents of the air rose to 5.13 parts per 10,000 as against a normal of 4.06 parts in the fresh air outside. Why not let the convalescents step into a day room outside and receive their friends?

3. *Flat Roofs.*—Flat roofs fitted with a ward kitchen and lavatories, with wind shelters, are very important. As Walter B. James[1] says, the "hospital roof should hereafter be defined as 'the floor of the top story'." This is perhaps less important for the pavilion type of hospital and may be incompatible with arched ward

ceilings, but it is an absolute essential for the many-story building, and the mansard roof should be forbidden absolutely. In winter especially there are many days when the roof can be cleared of snow, or when after a rain it will be much dryer and warmer than the ground and afford a suitable place for exercise, and in summer it catches breezes that may not be felt on the ground. With proper shelters or "lean-tos" and awnings the roof should be occupied by many patients every day in the year except in actual blizzards, as it now is at the Presbyterian Hospital and the Hospital for Ruptured and Crippled in New York, for example.

4. *Porches.*—Verandas accessible to every ward should be regarded as important as the wards themselves. They do not darken the wards, if properly constructed, as proved at Bellevue Hospital, and, if necessary, a segment of glass flooring may be let in over the windows of the wards below. The communicating door sills should be low and the doors wide, so that the patients' beds may be wheeled out easily. The balconies, like the roof, should be furnished with screens and awnings and placed with due regard to sun and with wind exposure, so that they may be in use the year round. I have kept pneumonia patients out on such balconies at

Fig. 6.—Boucicaut Hospital, Paris, showing one-story pavilions with two-story service buildings. To left, glass solarium at end of ward. Erected 1898, covers 6 acres, contains 250 beds. Pavilions are connected by a service subway.

Bellevue Hospital when the weather was so cold that their sputum froze in the cups, and it is always interesting to see how the fresh outdoor air lessens delirium, dyspnea and cyanosis in such cases and promotes sleep. It is the constant testimony of the nurses that delirious patients of every sort when placed in the open air require much less "nursing," for they become so much quieter and more comfortable than they are in the wards, where every breath of air they inhale has surely been at least once, if not a dozen times, in the lungs of some one else.

5. *The Compass.*—The first thing to do in locating a new hospital is to study the points of the compass. The building is usually placed square with the lot in this country, whereas it should be placed with reference to the incidence of the sun's rays during the longest and shortest days, and also with regard to the prevailing winds, in order that the wards as well as the balconies may be correctly situated. I recently saw plans for a large suburban hospital on which the architect had not even placed the points of the compass, although the building was to stand in a lot of several acres.

6. *Ward Ventilation.*—Unquestionably the best type of ward window is the French casement opening outward, with a horizontal transom above. This type of window, which prevails in all the modern foreign hospitals, presents the following advantages: Either half may be opened, according to the direction of the wind, and when partially open there is less draft than from the sash window; the upper transom admits of additional air control, especially at night. The casement is less heavy to handle and easier to adjust than the sash, and it may be cut down to the floor in certain places to give exit to the balconies, the patients' beds being lifted by means of a special low truck. I have seen patients thus moved outdoors without awakening them. The ward windows should be planned with special reference to these needs, rather than exclusively for their appearance from the outside, as is usually the case, and it is by no means necessary that they should all be of identical size and shape.

7. *Light.*—All windows should be furnished with dark green shades, so that when needed the very ill may have the restfulness of tempered light, rather than the staring white glare to which all are usually subjected, irrespective of their condition. Similarly the wards

Fig. 7.—Interior of one-story pavilion ward at the Boucicaut Hospital, showing arched ceiling, casement windows, solarium, etc.

should be tinted of an agreeable shade of green or blue, which is more restful to the eyes of those who have nothing else to gaze on all day. This has been recently done in several of the New York hospitals with marked improvement over the previous glaring white, and it is common in the foreign hospitals.

8. *Heating.*—The best method of ward heating in the changing American climates is by steam or hot water radiators in the wards, placed near certain of the windows. All hot air systems are open to the serious objection that in order to deliver the air through long conduits to the wards hot enough it has inevitably been previously superheated, often to 300 or 400 degrees Fahrenheit. Roasted air has lost some mysterious property which, for lack of better term, is called "vitality." Cooked air will sustain life, and so will sterilized milk and canned foods, but, as Walter James has said, "there is nothing uplifting about it," and it certainly will not cure anemia. This is not mere theory, but is borne out by extensive practical experience in various hospital wards. Whatever heating system be adopted there should always be at least one accessible heater for each

ward, preferably an open fire, where in exceptional weather the feeble may secure the comfort of direct heat radiation.

9. Rooms for hydrotherapy, thermotherapy and mechanical appliances for exercise should be provided, like those described above as existing in the foreign hospitals. There are many patients in a general hospital service who can inadequately be treated, if improved at all, by medicines alone. Such, for example, are cases of chronic gout and rheumatism, muscular rheumatism, neurasthenia, all manner of chronic joint diseases, many diseases of the nerves and muscles, paralyses, insomnia, certain surgical conditions, digestive disorders, etc., but such cases may be benefited greatly by non-medicinal treatment, for which adequate provision should be made in the structure of the hospital buildings.

Inhalation rooms should be provided for the treatment of a variety of respiratory system diseases, such as laryngitis, chronic or acute bronchitis, asthma, etc., which are slow to improve in the general ward air, without any form of local treatment.

SUMMARY.

Modern hospital buildings should be adapted as essential factors in the *treatment* of the patients, which can no longer be conducted to the best advantage in large wards alone, but which implies the use of many accessories, and especially the adaptation of environment, so that "in treating the disease" one may "not omit to treat the man."

34 East Thirty-first Street.

DISCUSSION

ON THE PAPERS OF DRS. THOMPSON AND OCHSNER.

DR. GEORGE H. M. ROWE, Boston, agreed with Dr. Thompson most thoroughly and heartily. The trouble with the hospitals to-day, he said, is that the architect and not the experienced hospital man builds the hospital. Dr. Rowe emphasized the undesirableness and the injudiciousness of placing large, extensive, expensive hospitals in the center of a large city. He thought it would be a great deal better if there were an emergency hospital in the center of the city; or convert the old hospital, which may have been built five, twenty or forty years, into an in-town hospital, and build the large hospital—that is, the main portion—out in the country. There is a down-town emergency station in Boston which has twenty-four beds and fills up, often, in twenty-four hours. Most of the patients in the large hospitals can be transferred after a one day residence in the hospital. Of course, there are always some patients that can not be transferred, but the majority of them can.

DR. W. WYMAN, Washington, D. C., was of the opinion that the character of the hospital depends a good deal on the location and on the number of patients that are to be treated. Years ago marine hospitals were established in different parts of the country. They were solid brick buildings. About 1875 this style of building was abandoned and the new hospitals were constructed on the pavilion plan, the executive buildings being made of brick, but the wards being frame buildings. These latter were supposed to be temporary, with the idea that they would be destroyed in about ten years, and new structures provided. But none have been destroyed, the principles of disinfection and asepsis having been developed and making such destruction unnecessary. In later years the pavilion plan was abandoned, but Dr. Wyman said, too much should not be drawn from this, as the marine hospitals, twenty-one in number, are limited in size. It has been found, however, that these pavilion hospitals, for a limited number of patients, are expensive in maintenance and expensive in administration as compared with the brick structures which are not pavilion in character. Some of the best hospitals to-day are the old brick buildings, which meet every modern requirement. An example of this is the Marine Hospital at Cleveland, erected about 1850, and the Marine Hospital at Boston, erected in 1860, both of which, with additions and alterations, have been made modern institutions.

DR. J. H. STOLPER, Krebs, Okla., called attention to the fact that last spring he went over the identical field that Dr. Thompson went over, not knowing, however, that he was following in Dr. Thompson's footsteps. He had another view in mind. He went officially to investigate the railway sanitary conditions in Europe, and as a matter of personal interest, to look after hospitals and prisons in European countries. He found, beginning with Rome, and continuing through France, Germany and Austria, that the larger hospitals receive the very best attention and the largest appropriations. Dr. Stolper found that these modern hospitals of Italy, of France and of Germany do not compare favorably with the hospitals in the smaller cities of the United States. He thought that the whole force abroad has been concentrated on the larger hospitals. Dr. Stolper said further that the question of temperature has been neglected not only in our hospitals, but in all public buildings. The ventilation idea as mentioned by Dr. Ochsner has been improved on in the new addition to the New York penitentiary on Blackwell's Island. From Dr. Stolper's point of view they have obtained there as ideal a condition of ventilation as can be obtained.

DR. SENECA EGBERT, Philadelphia, thought that Dr. Ochsner's points have one element in their favor; that is, in the question of ventilation. It certainly is going to be more in consonance with natural laws of ventilation to have a comparatively high building than a building long-stretched-out on a horizontal plane. By drawing air through long horizontal flues and ducts one is working against Nature; and, practically speaking, it seems to Dr. Egbert that if the same air space and the same service are to be considered, the determining factor here will be the economy of ventilation and the economy of heating; because rules applying to ventilation will apply to the carrying of heat, no matter what the vehicle may be, whether air, water or steam. Another thing, he said, that has been demonstrated positively in some hospitals in the last few years is that the different floors of a vertical hospital may be just as much separated as the different parts of a horizontal hospital. These two things are of great importance and go far to make Dr. Egbert feel that, in cities, at least, Dr. Ochsner's plan is one worthy of great consideration.

DR. W. GILMAN THOMPSON, New York City, asked Dr. Ochsner to add one or two things to his plan. He would like to have him place balconies in connection with the wards, so that patients could be kept outdoors when desired; also, to have small wards for the proper classification of cases and room where the patients can obtain exercise. Patients are not in bed all the time; many surgical and other patients need to walk and exercise. There ought to be day rooms where convalescent patients could get out of the depressing influences of the ward. These are all very essential features; and the architect, in executing the plans, might place the windows in better relationship to the wards so that there would be room for the beds when the windows are opened, without too much draft. In all private houses we like to open windows and get fresh air, but in hospitals one usually finds stale, superheated air. Dr. Thompson said that there is no need for having trees so large that they would occasion dampness. They can be cut down, if need be, and replaced.

DR. A. J. OCHSNER, Chicago, stated that the low pavilion plan for the construction of hospitals was introduced in every detail by an English engineer named Roveland, who planned a complete cottage hospital for the town of Stonehouse, near Portsmouth, Eng., 150 years ago. So perfect was this plan in every detail that it might well serve as a model for the present time. One hundred and twenty years ago the pavilion plan received the official support of the French Academy of Paris, M. Poget having prepared the plans for a hospital with 5,000 beds. The French revolution prevented the construction of the hospital. It was, however, the work which was done by the commission in charge of the construction of the Johns Hopkins Hospital which attracted the greatest amount of attention everywhere and which virtually popularized the low pavilion

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plan. The Hamburg Hospital at Eppendorf, which was completed nineteen years ago, has stood as a model of this system of hospital construction ever since its completion. It was planned under the supervision of Professor Kurschmann, who followed very largely the ideas laid down in the report of the Johns Hopkins commission. Dr. Ochsner regarded the point brought out regarding the position of windows an important one. There are several modern contrivances in use in a number of hospitals which will permit the bed to be near a window without being in a draft. Every hospital, he said, should have a large area of balcony space, not balconies for ornamentation, but balconies for use. His plans provide for these at the end of all halls. The flat roofs of these institutions should be utilized for the same purpose. This can be done by arranging the elevators so that the patients can be carried to the roof. The most pernicious form of heating, in Dr. Ochsner's opinion, is that employed in the so-called closed systems of combined heating and ventilation, because in these hospitals all the air supplied to the patients is forced over steam coils during the cold seasons of the year. The lowest temperature possible in steam-heated coils is 212 F., and many times the steam is superheated so that it reaches 400 F. Consequently the air is spoiled by being scorched. This fault can readily be overcome by passing air over coils heated with hot water regulated with a very simple device at a temperature not to exceed 160 F., which is not sufficiently high to spoil the air. It requires, however, a very large number of coils, if this low temperature is maintained, to elevate the temperature of the outdoor air to the proper degree, which should be approximately six degrees F. above the normal temperature of the room. This is a very important matter which, in time, must be generally adopted. In the larger cities of this country the physician and surgeon is not usually concerned with obtaining the funds for construction and maintenance of hospitals. These funds are supplied by societies, by church organizations or by philanthropic individuals. It is quite different in the smaller towns. There the medical profession must virtually secure the financial support both for the construction and for the maintenance of hospitals. It is consequently imperative to secure efficiency in these institutions with the means at the command of the profession. Moreover, the hospital must be so planned that its maintenance is possible under existing conditions. In the large cities it is reasonable to expect important changes during the next few decades. With the introduction of ambulance systems similar to the system in vogue in Berlin, with the addition of automobile ambulances, the necessity for locating hospitals in the center of great cities virtually ceases to exist. Dr. Ochsner showed that with a careful distribution of automobile ambulance stations, properly supplied with ambulance surgeons, it will be possible to carry all emergency cases to hospitals located near parks in the city, or in good-sized parks in the outskirts of the city. By telephoning to the hospital the moment the patient is placed in the ambulance everything can be in readiness when the patient arrives at the hospital, so that there is virtually no loss of time. Dr. Ochsner contended that it is a serious error to build many storied hospitals because of lack of space. The same area of land should be utilized as for hospitals built on the low pavilion plan. We should build many storied hospitals because they provide better air, more sunlight, less street dust, less noise and because their construction and maintenance is more essential.

Habitual Users of Peruna.—In the *Lancet-Clinic*, Aug. 3, 1907, W. H. DeWitt reports having, within the past year, two patients suffering from chronic alcoholism due to the habitual use of peruna. The second patient suffered from extreme nervousness and insomnia, and denied using stimulants to excess, but admitted taking five or six drinks of peruna daily for two years. DeWitt comments on the explanations given by the manufacturers of peruna as to the incorporation, in this "hypothetical cocktail," of a laxative. "At the solicitation of friends" would more correctly read, "at the behest of Uncle Sam." The fact that the press of the country aids and abets the traffic in this nostrum is cause for caustic criticism on the part of Dr. DeWitt.

AN INHALER FOR THE ORDINARY SEQUENCES AND MIXTURES OF ANESTHETICS.

ON THE PRINCIPLE OF UNOBSTRUCTED RESPIRATION.*

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NEW YORK CITY.

Undesirable respiratory symptoms during anesthesia may be said to belong to two classes: those due to the patient's condition and those dependent on the means of administering the anesthetic. The former are often not remediable, the latter may fully be. Time does not permit discussion of the manifold causes which underlie stertor and other unfavorable respiratory signs during etherization, but does require mention of two which may be entirely dependent on the apparatus used, namely, first, added work being done by the lungs and by their auxiliaries, and, second, obstruction to the inflow and outflow of the tidal air.

Both, by virtue of the mass of gauze, of cotton or of sponge through which the patient must force his respiration, are actively inherent in the ether chamber of the average bag-inhaler of which Bennett's, Gwanthmey's, Clover's and Allison's inhalers are familiar types. Both are also caused by the space left below the packing in the old-fashioned newspaper-and-towel cone—a space insufficient, as a rule, for the 500 c.c. of tidal air of the average adult.

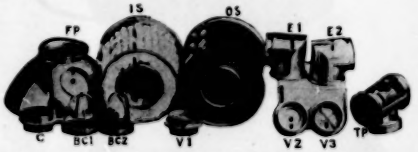

Fig. 1.—FP, metal face piece; IS, inner shell of ether chamber; OS, outer shell of ether chamber; E1 and E2, elbows used only with gas and oxygen mixture; TP, T-piece used in all sequences and mixtures; V1, V2 and V3, removable and reversible valves; BC1 and BC2, bag-cages; C, collar for attaching bag-cage to T-piece.

The specialty of anesthetization in this country is really just beginning to be developed because the importance of careful administration and because the possibilities of the anesthetic itself for determining the issue of a case favorably or fatally are now more fully realized than ever before. Gentleness and control of administration are the watchwords of modern anesthesia.

Many years ago I thought of the possibility of devising an inhaler which would accomplish four things: 1, leave the normal work being done by the lungs virtually unaffected; 2, offer no obstruction to the inflow and outflow of the tidal air, leaving its motions normal; 3, allow fresh air to be admitted with each inspiration and to be controlled by the anesthetist; 4, preserve sufficient expired air and expired ether-fumes to warm the fresh ether-fumes, thus reducing refrigeration.

Such an inhaler would have the following advantages:

First, gentleness of administration, which is particularly important in childhood and old age and, for example, in septic conditions, in respiratory and genitourinary lesions.

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*Read in the Section on Laryngology and Otology of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

Second, simplicity of construction, so that all parts could be boiled for sterilization.

Third, minimal nausea, vomiting, pulmonary and renal congestion, not only on account of the graduated administration, but also on account of the measured quantity of air given.

Fourth, deliberation, as well as gentleness in producing the anesthesia. The time which this deliberation requires is a gain by securing the safety of the patient from the after-effects, to which the patient in the nature of things is entitled.

The inhaler has proved so valuable in my hands that it is hoped it will be found to be a gain along the lines of safety and precision. Its action is not unlike the vaporization methods of Junker and Braun, so admirably improved by Gwathmey, but the apparatus is in itself simpler and more readily operated and, so far as I have been able to make comparisons, gives quite the same results as to the induction of, the maintenance of and the recovery from the etherization.

The details of the inhaler are these: First, the maintenance of the normal labor of the lungs, and, second, the absence of obstruction to the tidal air are accomplished by taking two tubes larger than the adult trachea, fitted gas-tight over each other, with two matching windows opposite each other (see Fig. 1, OS and IS), so that when the indicator is at the word "air" of the scale the windows are closed and when it is at the word "ether" they are open to their full extent. Outside the windows of the outer tube screened with wire gauze is the packing of the ether-chamber.

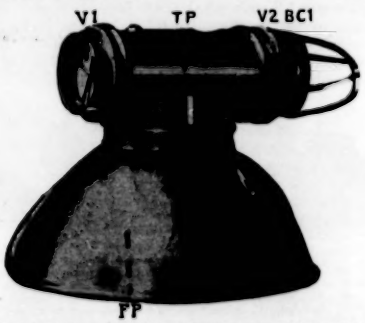

Fig. 2.—Inhaler assembled for administration of gas alone; FP, face piece; TP, T-piece; V1, valve in expiratory position; V2, valve in inspiratory position; BC1, bag-carrier.

Ether is fed through the lateral holes in the outer shell of the ether-chamber when the patient's face is turned to the side and through the end holes when his face is turned toward the front.

Breathing through a tube larger than his own trachea, the patient evaporates his ether from the ether-soaked gauze in the windows in a manner which is provided in no other inhaler so far as I am aware. The patient, furthermore, has no obstruction to his tidal air to overcome, as is quite obvious.

Third, fresh air is admitted with each inspiration by means of the inspiratory valve at one end of the T-form bag-carrier. This fresh air is controlled by the cut-off valve just within the tube (see Fig. 1, TP).

Fourth, warming of the ether-fumes and thus limitation of refrigeration are afforded by the bag as in all other bag-inhalers, which receives and stores the warmed expired ether-fumes, to be rebreathed by the patient, admixed with fresh ether-fumes from the windows.

This apparatus may be employed for the following anesthetics or sequences of anesthetics: 1, for gas alone; 2, for gas and air in definite proportions; 3, for gas and oxygen in definite proportions; 4, for the gas-ether sequence; 5, for the gas-ether sequence with oxygen; 6, for the ethyl-chlorid-ether sequence; 7, for the ethyl-chlorid-ether-oxygen sequence.

In addition to the unobstructed air-way of the ether-chamber, as already detailed, the special features of this inhaler are:

First, the T-form bag-carrier which permits the insertion or removal of valves at each end of the cross-piece of the "T" so that the foregoing sequences of anesthetics may be administered. The cross-piece also has a cut-off at each end for controlling connection with the bag and with the external air.

Second, the removal and reversible valves, which may, by simply turning them over, be made at will either expiratory or inspiratory. Thus, by manipulating the movable valves themselves rather than by providing special inhaler-parts containing fixed valves, as in Bennett's inhaler, the foregoing variations in use of the inhaler are provided for.

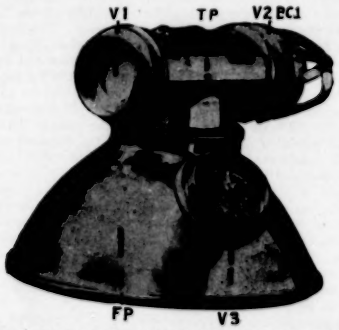

Fig. 3.—Inhaler assembled for administration of gas with measured quantities of air; FP, face piece; TP, T-piece; V1, valve in inspiratory position; V2, valve in the inspiratory position; V3, valve in expiratory position; BC1, bag-carrier.

The removable and reversible valves are shown in Figure 1 (V1, V2 and V3). each consists of: 1, the valve-seat, which bears an upper and a lower neck; 2, a thin brass, aluminum or mica disc; 3, two cross-wires, which hold the disc in place and limit its action.

Figure 1 shows the inhaler-parts for the seven sequences of anesthetics stated, for which the inhaler may be used. The parts are all separated to show how thoroughly they may be cleansed surgically. FP is the metal face-piece without the rubber face-cushion. The dotted line rests in the hole for the valve used in the administration of gas with measured quantities of air (Fig. 3) and of gas and oxygen (Fig. 4). IS is the inner shell of the ether-chamber, also called the gauze-carrier. The dotted line rests in one of the windows from which the ether is evaporated. The manner of packing the carrier with the gauze is fully shown. OS is the outer shell of the ether-chamber. The funnels of the side holes through which ether is fed into the gauze, are in plain view, together with the screw-head for operating the shutter of one of the holes. The dotted line rests in one of the windows of the inner tube.

When the inner and outer shells are assembled, the windows match each other when the ether is turned on, thus exposing the gauze, and when the ether is turned off the solid part of one tube covers the window of the other tube. E1 and E2 are the elbows used only with the gas-oxygen mixture (Fig. 4). TP is the T-piece used in all the sequences and mixtures, as shown in each of the subsequent figures. The oxygen- or air-end is toward the reader. The dotted line rests in the lumen of its cut-off, which is partly open. The head of the screw operating the cut-off is seen in the slot, under which is placed the scale for indicating the percentage of air or oxygen supplied through the cut-off. The gas-end is away from the reader. Its cut-off is so arranged that one looks through the air-window at a small chink in the shutter; in other words, if a patient were breathing through the apparatus (as in the figure) he would be getting a large percentage of air mixed with a small percentage of gas from the bag. V1, V2 and V3 are the three removable and reversible valves. One valve only is necessary in the gas-ether sequence, two for gas alone and three for gas with definite proportions of air, or for gas and oxygen. V1 is side view. V2 shows the seat and lumen of the valve. V3 the disc and cross-wires. BC1 and BC2 are the bag-cages; both of which are necessary only in gas-oxygen anesthesia. C is the collar for attaching bag-cage to the T-piece in all sequences excepting gas and oxygen. It is the duplicate of the valves, omitting only the seat, disc and cross-wires.

Figure 2 shows the inhaler assembled for the administration

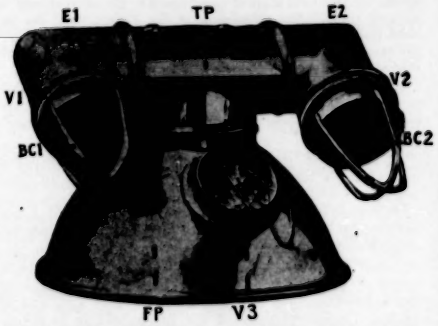

Fig. 4.—Inhaler assembled for administration of gas-oxygen mixture; FP, face piece; TP, T-piece; E1 and E2, elbows; V1 and V2, valves in the inspiratory position; V3, valve in the expiratory position; BC1 and BC2, bag-carriers.

of gas alone. As in Figure 1, FP is the face piece, TP the T-piece, V1, the valve in the expiratory position, V2, the valve in the inspiratory position, BC1, the bag-carrier. The rubber face-piece and bag are omitted. The air cut-off is also partly open as shown by the screw-head and scale just behind V1. The air-window is open wide, closing the gas shut-off fully, therefore a patient breathing through the apparatus would get only air during inspiration and, during expiration, some escape would take place through V1, while most of it would occur through the air-window. When the latter is closed the patient receives gas from the bag through V2 during inspiration, and, during expiration, closes V2 and opens V1, through which his expiration occurs.

The steps of inducing gas anesthesia are these:

1. The gas cut-off is closed and the bag filled with gas. The air-window is thus opened and permits air to enter freely during the early inspirations.
2. The air cut-off is opened wide, permitting the expiration valve to act.
3. The valve-hole of the face-piece is capped (Fig. 1).
4. The rubber face-cushion is now adjusted to the face and the patient told to breathe deeply through the nose and mouth.
5. Gas is thrown into his inspiration by opening the gas cut-off and closing the air-window. Expiration occurs through the valve at the other end of the T-piece, for which the cut-off has been left open.

Figure 3 shows the inhaler assembled for the administration of gas with measured quantities of air. The rubber face-piece and rubber bag are omitted. As in Figure 2, the air cut-off is partly open and the air window fully open, so that during inspiration the patient would receive no gas and only air through V1 and the air-window, while expiration will occur through V3 and the air-window. As the latter is closed the patient gets his supply of gas from the bag, his air through V1, the quantity of which is determined by the position of the shutter just behind it, as shown by the percentage scale, and he expires through V3.

The steps of inducing gas anesthesia with an admixture of air in definite proportions are these:

1. The gas cut-off and air-window are adjusted and the bag filled, all precisely as in anesthesia with gas alone.
2. The air cut-off is closed behind the inspiratory valve.
3. The valve-hole of the face-piece is uncapped and the expiratory valve is fitted into it.

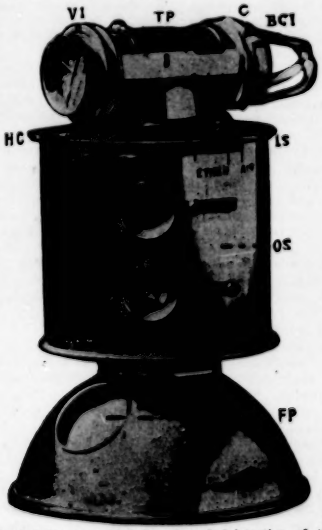

Fig. 5.—Inhaler assembled for the administration of the gas-ether, gas-ether-oxygen, ethyl-chlorid-ether or ether-chlorid-ether-oxygen sequences; FP, face piece; OS, outer shell; IS, inner shell; HC, hole-cover; TP, T-piece; V1, valve in expiratory position; C, collar; BC1, bag-cage.

4. The rubber face-piece is adjusted to the features of the patient and he is taught the proper vigor of breathing, then—
5. Gas is thrown into his inspiration by opening the gas cut-off and closing the air-window. Expiration escapes through the expiration valve in the face-piece.
6. When the gas anesthesia is nearly complete air is admitted into each inspiration by opening the air cut-off slightly (from 10 per cent. to 30 per cent. being the extremes for most subjects), thus throwing the inspiratory valve into action.

Figure 4 shows the inhaler assembled for the administration of the gas-oxygen mixture. The rubber face-piece and rubber bag are omitted. The air-window is again wide open, cutting off the gas bag. The oxygen cut-off is partly open. Thus during inspiration, the patient would get much air through the open air-window, a little oxygen through the cut-off, and would expire through V3 and the air-window. In

instituting the gas-oxygen mixture, the oxygen cut-off is closed, then as the air-window is closed the patient receives gas from the bag through V2 and expires through V3. As he passes under the gas, oxygen is delivered to him through V1 by opening the cut-off, the quantity of oxygen being indicated on the scale, part of which may be seen to the left of the screw-head which operates this shutter.

The steps of inducing anesthesia with gas-oxygen mixture are as follows:

1. The gas cut-off is closed and the bag filled with gas. The air-window is thus opened and permits air to enter freely during the early inspirations.

2. The air cut-off, i. e., in this case the oxygen cut-off, is closed and the bag filled with oxygen.

3. The valve-hole in the face-piece is uncapped and the valve inserted thereinto in the expiration position.

4. As soon as the rubber face-piece is adjusted and the patient breathes in the proper manner, gas is thrown into his inspiration by opening the gas cut-off and closing the air-window. Expiration escapes through the valve in the face-piece.

5. As the patient passes under the gas, oxygen is admixed with it, by opening the oxygen cut-off (from 2 per cent. to 20 per cent. are the extremes for most patients), until the patient's color is good.

Figure 5 shows the inhaler assembled for the administration of the gas-ether, gas-ether-oxygen, ethyl-chlorid-ether, or the ethyl-chlorid-ether-oxygen sequences. As in Figure 1, FP, face-piece; the dotted line rests in the valve-hole used in Figures 3 and 4, but in this case closed by a cover screwed on from within the face-piece. OS is the outer shell of the ether-chamber. The funnels of the feed-holes face the reader, the upper being closed, the lower open, through which the gauze is seen. The scale is shown above the words "ether" and "air" by which the anesthetizer turns from "air" slowly to "ether." IS is the inner shell or gauze carrier of the ether-chamber. Only the base-piece of this shows. HC is a hole-cover at the end of the ether-chamber, pushed away from the hole to indicate how ether may be fed through the end of the apparatus if the patient hold his face to the front. TP is T-piece, V1 is the valve in the expiratory position, C is collar and BC1 is the bag-cage.

The air window is shown as before, fully open, while the air cut-off is partly open. With the inhaler in this position, the patient would get free air through the window, and expire partly through it and V1. When the gas is turned on he expires entirely through V1 so that the shutter must then be wide open. For rebreathing the shutter is closed. After he is fully under, and while the ether is being turned on, V1 is taken out and reversed to the inspiratory position. When the patient is fully under the ether and ready for the operation, air is admitted through V1 in the inspiratory position by opening the cut-off according to requirements.

In all the preceding methods of assembling the inhaler, the neck of the rubber bag is slipped over the rings seen at each end of the T-piece. Thus it is impossible for the valves or collar with the bag carriers to slip out. The apparatus does not, therefore, come apart during use at all, whereas, the fact that the parts are removable, makes surgical cleaning of each possible, and, at the same time, allows each part to be used for several different purposes, thereby reducing the cost of the inhaler. There is not one part of this inhaler which does not occur in one or other form in all other inhalers, but is more detachable and cleansible in this instrument.

The steps of inducing gas-ether anesthetic are these:

1. The gas cut-off is closed, and the bag filled with gas. The air-window being opened by the shutting of the gas-shutter permits free air to enter, during the preliminary inspirations.

2. The air cut-off is opened wide, permitting the expiration valve to act easily.

3. The valve-hole of the face-piece is capped as shown in Figure 5.

4. The windows of the ether-chamber are closed by having the indicator at the word "air."

5. The rubber face-cushion is now adjusted to the face and the patient told to breathe deeply through nose and mouth. When he does this properly, the gas is thrown into his inspiration by opening the cut-off and closing the window. Expiration occurs through the valve at the other end of the T-piece, for which the cut-off has been left open.

6. Rebreathing, otherwise called to-and-from breathing, is secured by closing the cut-off, thus checking the exit through the expiration valve.

7. By this time the patient is sufficiently under the gas to permit turning in a small amount of ether. The quantity of the ether is gradually increased until the full volume is being given. When the patient is fully under the ether the valve is reversed to the inspiration position and then as needed definite proportions of air are admitted to keep the blood well oxygenated. Thus it will be seen, the patient receives in series, gas alone, then gas with ether in increasing amounts, next ether alone and last ether with an admixture of air, as his color may indicate.

8. To deepen the narcosis, at any stage of the operation, the air is simply stopped by closing the cut-off again, while more ether is poured into the gauze.

For the administration of the gas-ether-oxygen sequence, the only detail additional to the foregoing is to attach the bag to the oxygen tank and thus deliver that gas into the bag, to be mixed with the warm ether-fumes in the bag. In this case, of course, the valve must be kept in the expiration position.

For the administration of the ethyl-chlorid-ether sequence or the ethyl-chlorid-ether-oxygen sequence, the ethyl-chlorid is sprayed through the air-window of the T-piece until the patient goes under its anesthesia. All the subsequent steps are the same as those already described when gas instead of ethyl-chlorid is being used.

This apparatus has been found easy to operate, certain in results, safe and gentle in administration and surgical in its separability of parts for boiling, in the designer's hands.

It is assured that it will be found such in the hands of all who, after a little study of it, employ it in their work.

For their valuable suggestions and kindly aid I beg to express at this opportunity my best and sincerest thanks to Mr. Seward W. Hartley in preparing the mechanical drawings, to Mr. John T. Hoyt, of the Department of Physiology, Columbia University, in making the earliest models, now almost four years ago, and to Messrs. George Tiemann & Co. in consenting to manufacture and market the final model as set forth in this article.

DISCUSSION.

DR. JAMES TAYLOR GWATHMEY, New York, said that anything that will decrease the dangers of anesthesia and make it pleasanter deserves a great deal of credit. The objection to all closed methods of giving anesthesia is that in the majority of cases, especially in hospitals, the internes do not pay the attention they should; they clap a closed inhaler with a deflated bag over the patient's face, thus forcing the patient to attempt to breathe from a vacuum. This throws a tremendous strain on the heart and lungs. It may not kill the patient, but he may suffer from the after-effects for several days, perhaps weeks and months. Probably half the fatalities with closed inhalers occur in this way, by having a patient attempt to breath from a vacuum. With the safety valve of Dr. Pedersen that is absolutely impossible. It does not make any difference how ignorant the person who gives the anesthetic is of the theoretical part, or how carelessly he may give it, he can not make the mistake of smothering the patient in that way.

In regard to the value of gas-oxygen anesthesia, Dr. Gwathmey quoted Hewitt's latest edition of "Anesthetics" that gas-oxygen is the greatest improvement in anesthetics that has been made in the last ten or fifteen years. The anesthetist can keep a deeper anesthesia, using oxygen instead of air, and remove the useless nitrogen in the air and replace it by an equal amount of nitrous oxid gas, and in that way do away

with cyanosis and stertor in the majority of cases. Dr. Gwathmey thinks Dr. Pedersen is to be congratulated on the apparatus, which is easy to operate. Dr. Dawbarn, he said, has stated that in the last eighteen years, since using different closed methods with not very much attention paid to the anesthetic, he does not know of a single case of pneumonia, and attributes it to the closed method of heating ether. Any apparatus that does not heat ether is based on wrong principles.

DR. VICTOR C. PEDERSEN, New York, said that in the last six months he has had perhaps half a dozen distinctly dangerous cases in which to administer an anesthetic. One patient was a man 84 years old, who had abscess of one kidney. He went under the ether, with this apparatus, so gently and breathed so quietly that one operator thought something was the matter. The man came out quickly and was able to talk within ten minutes, and the operator said that he had done distinctly better than the average patient younger in years. Another case was an old man, ten years less advanced in life than the first, who underwent a prostatectomy with the same results of the anesthesia. Anything that tends to make the giving of anesthetics genuinely scientific is well worth going into, and Dr. Pedersen hopes, in the hands of others, as well as in his own, that this apparatus will be found serviceable and safe. Of the ether chamber he said that he has drilled a hole in one side of it so that when the ether chamber is unduly filled the danger will be communicated to the anesthetist.

AN EXPERIMENTAL STUDY OF INTESTINAL OBSTRUCTION.*

R. D. McCLURE.

BALTIMORE.

The problems in connection with intestinal obstruction,[1] aside from the investigation of the causes and best methods of treatment, are concerned chiefly with the explanation of the fulminant symptoms which follow an acute occlusion and which lead rapidly to death, unless the obstruction be promptly relieved. Such symptoms, in their intensity and sudden onset, seem almost out of proportion to the mere retention of intestinal contents, especially since fecal impaction, with an equally complete retention, may persist for a long time without such a violent reaction. Various hypotheses have been offered, and particularly in recent years a number of investigators have endeavored to find an explanation of these remarkable symptoms.

As is well known to every surgeon, vomiting, collapse, disturbances of blood pressure, sweating, etc., together with distension and more or less pain, follow quickly on an intestinal occlusion, and if this be not relieved a later train of symptoms appear, obviously due to a toxemia. There is a diversity of opinion, however, regarding the cause of these symptoms. Some consider them largely due to reflex disturbances set up by irritation of the nervous structures in the intestine. Others consider the whole syndrome to be the result of absorption of poisons from the obstructed intestine.

Bouchard was the originator of this theory of autointoxication, believing that poisonous substances are absorbed from the stagnant intestinal contents, having an especial affinity for the central nervous system. Lepine and Molliére thought that these substances were ptomains.

Kukula secured at operation the contents of obstructed intestinal loops, filtered them through Chamberland filters, and injected the filtrate into dogs. The results were negative as a rule, although an alcoholic extract of this material produced symptoms of intoxication when injected into animals. Such animals suffered from repeated attacks of nausea and vomiting, followed by diarrhea with tenesmus, sweating of the paws and depression or collapse. Occasionally there were tonic and clonic convulsions and paralysis of the hind limbs. These symptoms gradually passed off. He states that not only toxic fluids, but toxic gases as well, may accumulate in the obstructed intestine, mentioning hydrogen sulphid and methyl-mercaptan as especially important; that he further believes the vomiting and other results of obstruction can hardly be explained by the reflex theory, although in the early stage the vomiting may be incited by the irritation of the nerve endings, due to the acute stretching of the bowel.

Fig. 1.—Obstruction in lower portion of colon; C, cecum; L, ligature.

Albeck found that the contents of an occluded loop of intestine were much more poisonous than those of the normal intestine, and he was able by injecting the filtrate from this material into rabbits and cats to produce diarrhea, convulsions and collapse, with death in from four to fifteen hours. He found that the poisons are soluble in water, pass through a Chamberland filter and withstand boiling. He thinks that they may be regarded as putrefactive poisons.

Boeszeky and Genersich considered the possibility of a general bacterial infection in ileus. In experimental obstruction of the colon in rabbits they found *B. coli* in the peritoneal cavity in 45 per cent. of the cases, in 29 per cent. in the blood and in 17 per cent. in both peritoneal cavity and blood. When the small intestines were ligated *B. coli* were found in the peritoneal cavity in 28 per cent., in the blood in 18 per cent., and in both peritoneal cavity and blood in 9 per cent. They con-

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

* From the Hunterian Laboratory of Experimental Medicine.

1. To Dr. W. J. McCallum I am indebted for the opportunity to do this work. It was carried on under his direction and with his assistance. Some of the experiments were done by him alone.

sider the severe symptoms to be due to a general septicemia with intestinal bacteria, the *B. coli* playing an especially important rôle.

Clairmont and Ranzi agree with Kukula in rejecting the reflex theory in explaining the symptoms of ileus. They, too, injected the filtered contents of obstructed intestine into various animals, subcutaneously, intraperitoneally and intravenously, and found as a result a quickening of respiration, dilated pupils, increased reflexes, tonic and clonic spasms, etc. Filtrates from the aërobic bouillon cultures of the entire intestinal flora were also found to be toxic, though no definite toxin could be obtained from the culture of any individual organism. Filtrates from the bouillon cultures proved to be non-toxic.

Our experiments have been carried out along similar lines in the hopes of throwing further light on the clinically well-known symptoms. An obstruction is easily produced by ligating the intestine with a doubled cotton cord. Occasionally such a ligature cuts through the wall of the gut and is discharged per rectum, the continuity of the intestinal lumen is re-established and

Fig. 2.—Isolated loop showing distension: A, isolated loop; B, normal intestine.

the obstruction relieved. Ordinarily, however, a complete occlusion of the bowel is produced, for even if the muscular layer is cut through by the cord the tough submucosa remains intact.

Certain of the symptoms which are so characteristic in man and so useful in the diagnosis of obstruction are difficult to detect in the dog, but in general the picture is the same in both. There is stoppage of the passage of feces, although when the obstruction is very high one stool may be passed on the first day. Peristaltic movements were felt through the abdominal walls in only one case, for the parietes are usually held rigid. Vomiting was a more or less prominent symptom in spite of the fact that no food or drink was taken by the animal after the obstruction was produced. Drowsiness and apathy were very marked. Perhaps it may be said that all the symptoms appear more slowly than in man, though they progressively increase in intensity.

The severity of the symptoms and the duration of life varies with the location of the obstruction. An obstruction in the large bowel is not followed by the symptoms of collapse as quickly as in the small intestine; the average length of life after obstruction in the colon was seven days, whereas after obstruction in the ileum it was four days. In one experiment, after the obstruction was produced by aseptically reopening the laparotomy wound, the intestine was examined daily. Seven hours after the obstruction the intestine above differed in no way from that below the ligature. There was no increased peristalsis, distension or evidence of vascular disturbance. At the end of twenty-four hours the omentum was slightly adherent and the serous surfaces slightly injected. The intestine below the ligature was collapsed, but was of normal consistency and size, while that above the obstruction was somewhat injected and slightly distended with fluid. There was no increased peristalsis. After forty-eight hours the distension above the ligature was much greater and the walls of the distended portion were of a purplish hue. No peristalsis was observed, but the loop was not yet paralyzed, for even after seventy-two hours contraction could still be induced in the purplish distended intestine above the ligature by snapping or pinching.

The dilatation of the intestine just above the ligature was sometimes enormous, the bowel reaching four or five times its normal diameter, but this gradually tapered down, and if the obstruction was low in the bowel the intestine near the stomach was normal in size. In obstruction of the colon, however, the distension is generally uniform up to the ileocecal valve, above which the smaller intestine gradually tapers to its normal diameter (Fig. 1).

In a few cases, after the obstruction had existed several days, peristalsis was studied by floating the intestines out in warm salt solution and administering pilocarpin intravenously. In one case of obstruction at about the middle of the small intestine there was found, two days afterward, only moderate distension above the ligature. On injecting pilocarpin there was a gradual, even contraction throughout the distended portion, but no waves were apparent as in the normal intestine below the ligature. A contraction ring could be induced at any point along the distended gut by pinching or snapping the wall, but this remained stationary and did not progress like a peristaltic wave.

In another animal, four days after the obstruction was produced, there was a much greater distension, and at the first injection of pilocarpin waves could be seen passing downward to within 10 cm. of the ligature, where they stopped. Later, waves brought out by pinching the gut were observed passing in the reverse direction. The lower 10 cm. of the distended intestine were completely paralyzed and no contraction could be induced even by pinching. Peristalsis in the part below the ligature was normal and passed in the normal direction. A hard stool was expelled during the experiment.

In cases in which the obstruction was allowed to continue until the death of the animal various conditions were found at autopsy. In most instances the greatly distended proximal loop was found to occupy most of the abdominal cavity, pushing aside the remaining loops, the ligature being surrounded by slightly adherent omentum. The distended portion was intensely hyperemic, but there was, as a rule, no dulling of peritoneal gloss, and whatever accumulation of fluid there was in the peritoneal cavity showed no coagulum of fibrin. Smears and cultures made in a considerable number of such cases from the peritoneal cavity, heart's blood, liver,

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spleen, and kidneys showed no bacteria. The contents of the distended loop, on the contrary, were very foul and contained myriads of bacteria of many varieties. In contrast with the flora of the normal intestine at these high levels, where very few bacteria are to be found, the number in the obstructed loop is astounding. Many of these organisms stained by Gram's method, but relatively few grew on ordinary culture media, and the agar plates made from the loop usually showed only *B. coli* or *B. lactis aerogenes*, although we knew that dozens of other species were planted.

In the time at our disposal it was deemed hopeless to try to determine whether any particular variety from these many organisms was especially concerned in producing symptoms in the animal. Since we had shown that the bacteria themselves, however, did not pass into the general circulation, nor even into the peritoneal cavity, we endeavored to determine whether or not some toxic material was present in the fluid in which they grew, absorption of which might produce the symptoms.

Clairmont and Ranzi showed that for the first twelve hours after distension there was an increased rate of absorption from the obstructed loop, followed by a decrease in rate. This they tested by determining the amount of potassium iodid in the urine after feeding. Garbarini similarly showed that, for a time, the distended intestine absorbs soluble material more rapidly than the contracted gut.

Our experiments consisted in the introduction of some of the contents of an obstructed loop into an isolated loop in another dog. The open end of this isolated loop had been allowed to heal into the abdominal wall. It was found impossible, however, to confine in this loop an amount of fluid sufficient to produce any symptoms, since the active peristalsis set up by the irritating substances quickly led to its expulsion, in spite of our efforts at closing the orifice.

In other experiments the contents of the obstructed loops were passed through a Berkefeld filter and injected into the peritoneal cavity after the manner of Kukula, Albeck and others. None of these experiments led to a fatality, but intense symptoms of depression and apathy, sometimes with vomiting and straining movements, occurred. Nevertheless, the animals recovered completely by the next day and remained well. As one might expect, the material which accumulates in the obstructed intestine does not seem to be very toxic in small quantities and a single dose, even when injected intraperitoneally, may be withstood, although its continued absorption over a period of several days, as in clinical cases of obstruction, may naturally lead to death from a cumulative action of the poison.

That these poisons are the product of the bacteria and not merely stagnant digestive secretions, we attempted to show by an experiment in which the intestinal loops were so anastomosed with the stomach and with one another that the bile and pancreatic juice was diverted from the whole upper part of the intestine and poured into the lower ileum.[2] Under these circumstances, if the obstruction were produced just above this anastomosis in the lower ileum, it was found that the symptoms proceeded quite as rapidly as before, hence they can not be attributed to stagnation of bile or pancreatic juice.

Other methods were tried in the effort to bring about a condition analogous to the above without producing actual obstruction. It was obvious that this could be done by the isolation or exclusion of a loop of intestine, the ends of which were closed, the circulation remaining intact. The continuity of the intestinal tract was reestablished by anastomosing the free ends.

Dr. W. S. Halstead in 1887 was the first to carry out such an experiment. He anastomosed the ends of the excluded loop forming a ring. One animal lived one month. It apparently showed no symptoms of intoxication, but became progressively emaciated. At autopsy the isolated loop was distended to about the size of an inflated human transverse colon, with fecal smelling, thick, brownish fluid. The wall of the loop was two or three times as thick as normal. Herman in 1892 carried out similar experiments and found that his animals died after about six days as the result of the swelling up and bursting of the isolated loop.

Salzer in the same year in a similar series of experiments found in two dogs, nine and ten months after operation, that the loops were strongly contracted and the walls entirely sound, the contents being only a crumbly epithelial detritus. Berenstein, Reichel and Baracz carried out similar experiments; Reichel operated in two stages, suturing the ends of the isolated loop to the abdominal wall in the first operation and anastomosing them in the second. He later found ulceration and a hypersecretion of mucus in some of these loops. Baracz found hypertrophy of the muscularis and a chronic catarrhal condition of the mucosa.

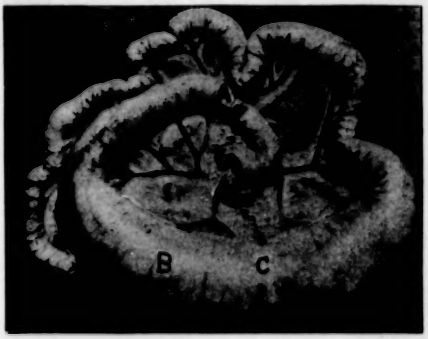

Fig. 2.—Showing dilatation in chronic obstruction produced by reversing a portion of intestine; A, lower end of reversed loop; B, reversed loop; C, upper end of anastomosed loop.

Enderlen, Juste and Kutscher, in experiments which were carried out in order to see whether such exclusion of an intestinal loop would be justified in surgical operations, found that with one exception the animals died after a few days with great distension and sometimes rupture of the excluded loop. The one animal which proved an exception lived 258 days and the intestinal loop was then distended and full of inspissated material.

In our experiments, thirteen in number, death has always resulted within a few days with symptoms similar to those of obstruction. In all instances the isolated loop became distended with fluid (Fig. 2) containing enormous numbers of bacteria. Evidently it acts like a culture tube in a thermostat, for smears taken from the mucosa, before closing the ends of the loop at the operation, showed very few organisms. Efforts at

2. Dr. Cushing's class in operative surgery prepared the animals for a few of these experiments.

the partial disinfection of the loop by irrigating it with boric acid solution or isoform or by introducing crystals of thymol into it have not proved successful, since these substances are either too toxic or ineffectual.

From these experiments one gains the impression that the symptoms and death may result from the absorption of poisonous materials produced by the growth of bacteria in the isolated loop as it might from the growth of bacteria in an enormous celloidin capsule inserted into the peritoneal cavity. Still it must be said that not all of these experiments were free from objections, for in several of them the mesentery of the loop became twisted and disturbances of the circulation occurred sufficient to interfere with the vitality of the wall of the loop and allow of the wandering of bacteria. In one or two instances there was ulceration of the wall and perforation, with peritonitis and general septicemia.

Even in the simple obstruction of the intestine it is not uncommon to find, in the walls of the distended loop, changes which sometimes cause perforation. In several of our experiments autopsy revealed an acute general peritonitis, which had resulted from the formation of ragged ulcers above the obstruction in the distended hemorrhagic wall, with the extravasation of the contents of the loop. In such cases, of course, smears from all the organs showed bacteria. These ulcers have

Fig. 4.—Same as Fig. 3, showing proportion of space occupied in the abdominal cavity.

long been known in cases of chronic obstruction, and it seems that the old explanation that they are due to the irritation of stagnant fecal material is much less plausible than that of Kocher, who speaks of them as *Stauungs* or *Dehnungs-geschwüre* and ascribes them to the disturbance of circulation resulting from the stretching of the intestinal wall.

In this connection some experiments were done with the aim of producing infarction or strangulation of part of the intestine, with results analogous to those so familiar to the surgeon. According to the time which elapsed before death, hemorrhage, necrosis, ulceration and even perforation might occur in the strangulated area, and the outwandering of bacteria through such an injured wall into the general circulation and organs seemed to proceed very rapidly.

It is interesting to compare the symptoms of a chronic obstruction with those of an acute obstruction. In a series of experiments by Mr. H. F. Derge of the Johns Hopkins Medical School and myself, in which a portion of intestine was reversed, a chronic obstruction was produced. After the first week there were no symptoms of acute obstruction. The animals became progressively emaciated. At autopsy several months later there was a distension of the intestine greater than in most of the cases of acute obstruction. Yet with all of this retention, and great distension, lasting over a long period of time, no severe symptoms were manifest (Figs. 3 and 4).

The excretion of indican in the urine was determined in a number of cases, and it was found that in general the amount was greater in cases where the obstruction was high up in the intestine, although, as a rule, the intensity of the color reaction would not permit a diagnosis as to the site of the obstruction.

Thus, if we exclude those conditions in which ulceration of the intestinal wall leads to perforation and peritonitis, or in which infarction renders the wall permeable to bacteria, it seems that obstruction of the intestine may persist for days, with stagnation and enormous growths of bacteria in the obstructed loop. The bacterial poisons alone may be absorbed while the organisms themselves do not leave the intestinal lumen. It seems probable that this is true in cases of obstruction in man, although there, too, for the reasons indicated, there may be an invasion of the bacteria into the tissues in the later stages, and the symptoms may then be those of a general septicemia.

In animals the progress of the symptoms is such that it is difficult to see how irritation of the intestinal nerves can play any considerable part in their production, and to us it seems equally reasonable to suppose that in man the symptoms of obstruction are rather the result of intoxication than of any mechanical disturbance with the nervous mechanism of the intestinal wall.

POSTOPERATIVE ILEUS.*

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In the list of complications and sequelæ following a surgical operation involving the opening of the abdomen, perhaps no single one is more to be dreaded or more urgently demands early recognition and prompt relief than intestinal obstruction, and occurring as a postoperative ileus it is, in fact, one of the most serious and dangerous, as well as one of the most fatal surgical conditions, the surgeon is called on to face. It frequently is insidious in its manifestations, but more often rapid in its progress and liable to sudden and progressive changes which steadily but surely put the patient in a condition of extreme peril. One naturally has a feeling of dread when he has to face a case of postoperative ileus, because so often surgical relief is not sought until the patient is exhausted or until necrosis of the bowel wall has taken place, and associated either with general sepsis or, at least, general peritonitis.

When seen in this condition, the symptoms, to say the least, are formidable and the mortality under any method of treatment is excessive. The cases that occur shortly after operation and can be carefully watched by the surgeon are dealt with much more speedily and the results attending operative interference are much more promising. I fancy it has doubtless been the experience of every surgeon to have had the misfortune of seeing such distressing conditions combating and defeating his best efforts and calling again for life-saving procedures. Postoperative ileus, unlike other forms of

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907. The article is here abbreviated, but the complete article appears in the Transactions of the Section and in the author's reprints.

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intestinal obstruction, is more grave, as there are in the majority of the early cases two factors present which materially diminish the chances of success; one is an unhealed wound, and the other is the weakened and worn-out patient recently having undergone a serious or possibly life-saving operation. The unhealed wound or drain track is a serious source of infection to the fresh wound that has to be made in another quadrant of the abdomen in order to gain access to the abdomen. It has so happened that I have met with most of the conditions which are generally assigned as the causes of the various forms of intestinal obstruction.

THE LITERATURE.

Postoperative ileus is an extremely interesting subject, although an old one. I believe it is an ordinarily accepted view that Sir Spencer Wells published in 1860 the first descriptive paper on this subject.

His cases show in 1,000 ovariotomies a frequency and a mortality of 1.1 per cent., without operation. Fritch reported 1.6 per cent. mortality, and Klotz 31 cases with 5 deaths in 421 abdominal sections. The first operation, for this condition, though unsuccessful, is credited to Schroeder (1878), but Olshausen was the first to operate successfully (1879). Rohe (1894) reported 75 cases, in all of which the patients died, while Baisch (1905) reported 23 cases in 1,110 laparotomies. Peck reports 3 cases with 2 recoveries; McWilliams, 86 cases; A. M. Pond, 5 cases with 2 recoveries; L. M. Hotchkiss, 3 patients successfully operated on; E. Eliot, Jr., 7 cases with 4 recoveries. J. S. Mitchell reports 2 cases, probably of the pseudo-postoperative type.

There are cases of ileus of the postoperative type which are occasionally observed following operations not involving the opening of the peritoneal cavity. Several cases of interest are reported.

Finney reports one patient who died from volvulus on the fifth day after prostatectomy and another who perished from adynamic ileus following nephrotomy; enterostomy was performed in the latter case, but without relief, the patient dying of peritonitis.

With reference to the etiology, postoperative ileus may be divided into dynamic, strangulated, in which there is obstruction with interference with the blood supply, and obturative, in which there is obstruction alone, without interference with the blood supply. Clinically it may wound has healed, and late, developing after convalescence has been established and at varying intervals of a few months or some years, in which perfect health has been enjoyed.

The two principal causes which are most prolific in the etiology of postoperative obstruction are of a mechanical or septic origin, and the third cause is due to disturbance of the nerve supply of the intestine or to circulatory changes with autointoxication which give rise to paralytic or adynamic ileus, so these three types are ordinarily accepted as the types of postoperative ileus; first, mechanical; second, septic; third, adynamic.

DIAGNOSIS.

The diagnosis of ileus is naturally of the utmost importance, for when it is finally determined there is but one rational method of treatment. No surgical condition more urgently calls for early recognition than cases of postoperative ileus, and if it is of the type of strangulation ileus it is perfectly obvious that every hour of delay adds to the gravity and jeopardizes the only chance of relief; if the condition goes unrelieved, naturally it leads to a long chain of sequelæ by disturbances in the circulation of the mesentery of the bowel and terminates usually in a fatal sepsis.

The symptom-complex is by no means always clear and often diagnosis exceptionally difficult. We have to determine in the first place as to the immediate cases where there appears immediately following operation in the first few days abdominal pain, more or less severe, more or less pronounced tympanites, persistent vomiting, inability to get the bowels open, retention of flatulence, with slight elevation of temperature, quickening of pulse with leucocytosis. This is a clinical picture of obstruction in normal cases seen after operation by every surgeon, and presents many of the symptoms of postoperative mechanical obstruction. These are of the pseudo-postoperative ileus type; these symptoms after a few days of much apprehension clear up absolutely without any further disturbances.

If these symptoms above mentioned occur after the third day they are very suggestive of obstruction, but when observed in the first few days immediately following operation they are of no aid in the differential diagnosis, and when the resort to the usual therapeutic

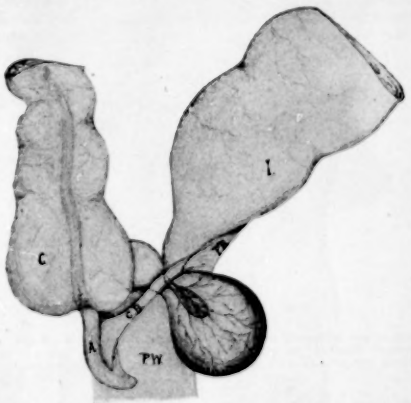

Fig. 1.—This drawing shows the knuckle of small intestine near the lower end of ileum which is acutely strangulated and the blood supply of the mesentery is likewise seriously interfered with. This case illustrates the great amount of meteorism that is usually noted in the afferent loop; the afferent loop in this case was enormously distended, congested, and near the seat of the obstruction dark and almost necrotic. Adhesions were released and bowel gotten up without resection and patient made an uninterrupted recovery. C., cæcum; P. B., pelvic brim; P. W., pelvic wall; I., ileum; C. B., constricting band; A., vermiform appendix.

measures is followed by the passage of feces and gas and relief of symptoms they are classed as cases of probable intestinal paresis or a form of adynamic ileus. Not infrequently these symptoms are marked and a number of hours are required before the usual remedies bring relief, and it is just such a clinical picture that causes most anxiety both to patient and surgeon, because frequently postoperative mechanical obstruction can be easily masked in these postoperative symptoms. The patient becomes much depressed and often critically ill. Naturally every sign should be sought for that will enable us to differentiate this pseudo-postoperative type from the true postoperative mechanical intestinal obstruction.

The first and most important link in the chain of

symptoms has been severe abdominal pain, and I consider this one of the most important diagnostic symptoms, usually of an intense, violent character, and, though with slight intervals of subsidence, generally continuous, renewing itself in intensity and more acute exacerbations. In the majority of cases it is referred to the vicinity of the umbilicus; usually slight change in the character and rate of the pulse, a little or no rise in temperature, vomiting then becomes pronounced and persistent with marked peritoneal shock rapidly following; the leucocyte count is always high, ranging anywhere from thirty to forty thousand; soon asymmetrical distension is noted, and later on von Wahl's loop with visible peristalsis can be made out.

In mechanical obstruction the pulse is not much disturbed; it is full and the tension is good. In peritonitis, on the other hand, the pulse is small and the tension is low.

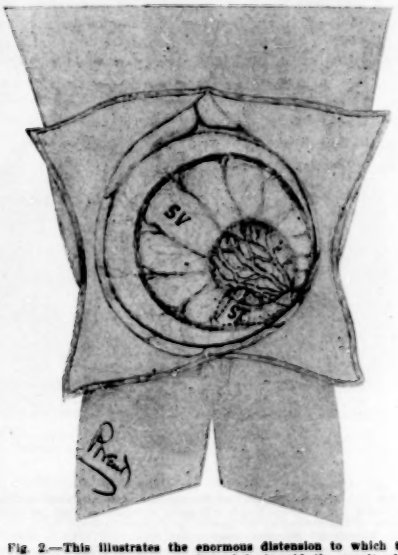

Fig. 2.—This illustrates the enormous distension to which the colon is capable; it shows a distended sigmoid the result of a volvulus of the sigmoid with thrombosis of the mesenteric vessels; the distended section was gangrenous and was resected.

SYMPTOMS.

The symptoms of ileus vary according to the causation in each case. The immediate form is largely of the adynamic type, and I am inclined to believe more often due to autointoxication than we have heretofore been wont to believe. The early obstructions are, in a large percentage of cases, due to infection following closely on operations done for an acute, suppurative condition about the appendix with spreading peritonitis or similar conditions concerning the pelvic organs, and in the vast majority of cases in my own individual experience the primary operation has been an appendectomy with drainage.

The late cases are due to bands, or drawn-out adhesions, resulting from old inflammatory exudates and loops of intestines are caught around them and become constricted, giving rise to true mechanical ileus. This type is more easily recognized and when promptly dealt with is followed usually with success. It goes without saying that in the early cases due to infection it is very difficult, and oftentimes impossible, to differentiate between peritonitis and a definite mechanical obstruction, as these conditions are often associated the one with the other.

When these symptoms manifest themselves by a late onset the diagnosis is usually clear, but when appearing early it is, indeed, often difficult to say whether they are those of peritonitis or intestinal obstruction. Many times the evidence gained by the examining hand is the most important aid in the differential diagnosis. The stiffening of the belly muscles imparted to the hand, and the marked universal muscle-spasm and rigidity which is noted in peritonitis, is generally not noted (and if so, not to such a degree) in acute intestinal obstruction.

In the late cases the abdominal wall in most instances remains flaccid and retains more or less of its normal softness. Furthermore, by inspection it is to be noted that in peritonitis abdominal breathing is apt to be less marked and often entirely absent; the abdominal muscles are held rigid, and also it should be observed as to whether or not there are any signs of intestinal movements. Absence of all signs of movements, visible peristalsis, etc., may be considered an index of the presence of peritonitis; whereas an increased peristalsis, when noted, points in favor of obstruction. Wilms considers peristaltic movements of considerable aid and says: "When they are stopped at a certain point, this characteristic stoppage of the peristalsis at a given point fixes the diagnosis."

It is, of course, of all importance to determine the character of the lesion and its position in the abdominal cavity, if possible; we know that the two types most commonly met with are mechanical and septic. The character and location of the pain in postoperative ileus is, as a rule, of no diagnostic value as a guide to the seat of the lesion, and is often misleading.

Local tenderness, as elicited by pressure with the examining hand, is, as a rule, entirely absent at first in the obstruction cases and always present in the peritonitic cases. Limited tenderness may appear about the second or third day and it is a symptom, when noted, of diagnostic value, as it may be restricted to the actual seat of the lesion and, therefore, of more value than the spontaneous pain which is always present. Diffuse tenderness generally indicates the onset of peritonitis and is always a symptom of marked clinical value.

The changes brought about in the bowel by an absolute occlusion are identical with those which attend a strangulated hernia. The bowel above the obstruction is red, congested and distended; below, the bowel becomes white and collapsed and the coil involved grows livid and purple. The afferent loop (that above the seat of strangulation) is distended, becomes paralyzed and is filled with gas and fluid, and the bowel wall which previously was impervious to the passage of bacteria now permits migration of bacteria and the absorption of toxins from the obstructed loop. Buchard, who was the first to call attention to autointoxication, and after him Mussat and Humbert, states that the general appearance of depression symptoms seen in ileus are brought about by the aborption of poisonous material from the stagnant and decomposing intestinal contents. Distension of the abdomen is at first comparatively slight and ap-

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pears more marked about the third day, and is less marked in cases attended by extreme vomiting.

METEORISM.

Meteorism, when noted, is usually due to the rapid formation of gas in the lumen of the intestines. This interesting condition formerly was assumed to be due to the accumulation dependent on the simple fact that the bowel was blocked up. This has long since ceased to be a satisfactory explanation as to the matter of gas formation, and the pathology of meteorism is a subject about which there has been much discussion.

Much experimental work has been done in this line. The valuable series of experiments as performed by Kader[16] are as instructive and interesting as any of more recent work. The results of his experiments go to show that when the obstruction of the bowel is associated with marked interference with the blood supply of the mesentery going into the strangulated loop the formation of gas develops much more rapidly than in cases in which the bowel wall alone is pinched, without strangulation of the mesenteric vessels (Fig. 1). In no form of intestinal obstruction is meteorism more sudden and more severe than in volvulus of the sigmoid flexure. The enormous distension to which the colon is capable is well illustrated by the accompanying drawing (Fig. 2), which is a distended sigmoid, the result of a volvulus of the sigmoid with thrombosis of the mesenteric vessels; the distended section was gangrenous and was resected by me. It has also been shown in experimentally produced ileus that where the return venous flow from the constricted loop is obstructed or strangulated that this condition in itself is the greatest factor in producing the most marked symptoms, and, furthermore, when the arterial supply is cut off, the symptoms are slower in becoming manifest.

Vomiting is one of the earliest, most common and most persistent of the symptoms. Treves[17] considers vomiting under three heads as follows:

1. The vomiting which appears at the very commencement of an acute case he considers to be reflex and of precisely the same nature as the vomiting which follows a wound of the abdomen or other injury. Such sickness may be coincident with the initial pain and may be one of the earliest manifestations.

2. The vomiting which marks the close of a fatal case of obstruction, and it is very often the vomiting of a rapidly increasing septicemia.

3. The vomiting which occurs during the progress of intestinal obstruction, excluding the initial vomiting in acute cases and the final vomiting in fatal cases, depends for the most part on the actual obstruction in the lumen of the bowel.

It is first persistent and copious in its onset and consists of the stomach contents, then it becomes bile-stained, and finally has an intestinal odor and is called stercoraceous vomiting. It is persistent until the end, unless the case is relieved. It used to be considered due to reverse or antiperistalsis, but recent experimenters have shown that it is not due to reverse peristalsis, but largely brought about by contraction of the diaphragm and of the abdominal muscles and of the mutual pressure that the distended coils exercise one on the other along the normal peristaltic movement of the bowel.

Indican recently has been shown to be present in empyema, cancer of the uterus and stomach, extensive suppurative processes, and for these reasons its presence can not be reckoned as of any especial diagnostic value.

SHOCK.

In the attempt to explain the marked depression and intense peritoneal shock which is observed in these late and unrelieved cases there has been considerable discussion and wide diversity of opinion. According to Nothnagel[21] two distinct views are advanced as the causes for these symptoms; one is the "nervous reflex theory" and the other the "intoxication theory." Autointoxication, which was first called attention to by Bouchard, seems the most plausible explanation. There is absorption of the poisonous material from stagnant and decomposing intestinal contents. Especial attention in the last few years has been given to this and much experimental work has been done by Albu, Kukula, Clairmont and Ranzi.

The outcome of these experiments goes to show that the filtrate of normal intestinal contents injected into animals produces results almost entirely negative; but the filtrate from the distended coil in an obstruction case gave serious symptoms, and often fatal results. Kukula showed that after injection into the peritoneal cavity the animals showed salivation, pronounced vomiting, diarrhea with tenesmus, and in some cases the animals showed a marked picture of collapse and prostration; peritoneal injections gave more pronounced results than subcutaneous. Wilms, in his work on ileus, is of the opinion that the absorption of poisonous gases does not seem to have much effect on men, and is of the opinion that autointoxication in many cases of ileus is the chief cause of death.

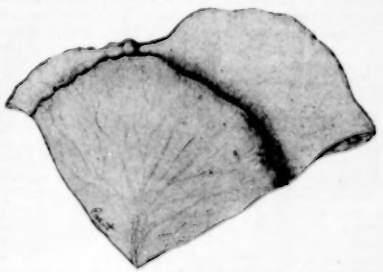

Fig. 3.—Obstruction of small gut, due to cicatricial contraction in the pinched knuckle of gut, following a strangulated femoral hernia—operated on for obstruction several months after the hernia operation.

Borszeky believes in the possibility of a general bacterial infection. He ligated the colon of twenty-four rabbits and recovered the *Bacillus coli communis* from fifteen; in eleven of these the *Bacillus coli communis* was recovered from the peritoneal cavity; in seven from the blood; and in four from both the peritoneal cavity and the blood. Death was brought about in sixteen of these cases before any anatomic changes in the peritoneum or necrosis of the intestinal wall were noticed, so that he is of the opinion that a general infection of the blood with bacteria, especially *Bacillus coli communis*, is the principal cause of the symptoms of ileus. Clairmont and Ranzi have in more recent times still further studied the subject of autointoxication and are

16. Deutsch. Ztschr. f. Chir., 1891, p. 57.
17. Intestinal Obstruction.

21. Diseases of the Intestines and peritoneum, page 394.

of the opinion, with Kukula, that the reflex theory of the symptoms of ileus is no longer tenable. But they are strongly of the opinion that the symptoms of collapse and depression are entirely due to autointoxication, and are identical with those which mark the end of a fatal sepsis. Treves[17] graphically says:

> There is about the patient who is dying of acute intestinal obstruction every suggestion of a poisoned man. He lies back in bed prostrate, with gaunt cheeks and sunken eyes. His pain had vanished, but some haunting fear has taken its place. The hands, which wander with pathetic restlessness over the bed-clothes, are cold and damp. Beads of sweat stand on the brow. There is still continued vomiting. The pulse has sunk to an uncountable thread. The breathing is labored and accompanied with faint sighs and groans, and the countenance is ashen and livid. Such a picture makes a reality of the metaphor of "the shadow of death."

A question which has a very particular bearing is, whether the intestine which has been for a long time strangulated ever becomes entirely normal again or not. Buchbinder from his experimentations is of the opinion that if the intestine has been for any considerable length of time strangulated, often it will never return to absolutely normal, but the walls remain more or less thickened and the peristalsis in this part of the intestine

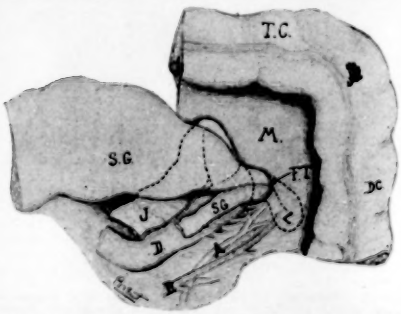

Fig. 4.—This illustrates obstruction due to a knuckle of gut caught in the fossa of Treitz; at the second operation no adhesions were found, whereas, there was every reason to believe that the obstruction was due to adhesions following general peritonitis. D., ascending duodenum; J., jejunum; A., inferior mesenteric vein; B., colica sinistra artery; M., mesocolon; L., strangulated loop of small intestine; F. T., fossa of Treitz; D. C., descending colon; T. C., transverse colon; S. G., strangulated gut.

may be interfered with. The accompanying drawing (Fig. 3) bears on this point and illustrates this condition very clearly (Case 3 in my series). In my list of herniotomies, including all cases of hernias and all varieties, reducible, irreducible, inguinal, femoral or umbilical, strangulated or non-strangulated, there has been but one case of postoperative ileus, this one as shown in the drawing.

A question which is of particular interest to surgeons is as to the disappearance of adhesions following cases where the abdomen has been opened for diffuse general peritonitis. It has been my experience, and I am quite sure the experience of all surgeons, to open secondarily the abdomen and find all adhesions cleared away, as in Case 2 in my series, where I had every reason to believe that the obstruction was due to adhesions following general peritonitis, but at the operation it was found to be due purely to a knuckle of gut caught in the fossa of Treitz, and no adhesions whatever were found as the result of the old peritonitis, as illustrated by accompanying drawing (Fig. 4).

Likewise, in Case 18 in my series, where a diffuse general peritonitis has been noted, at the secondary operation for the cure of a fecal fistula, no adhesions were observed. Both of these patients had been subjected to the same treatment; much traumatism had been inflicted by peritonitis, extensive gauze and rubber tube drainage had been used, yet the adhesions had entirely disappeared. In other cases, however (as in Case 14 in my series), they remain and are the cause of many of the postoperative cases now under discussion. In this case no drainage was used; abdomen closed, and then on secondary operation the abdomen was found full of adhesions, matting up the intestines everywhere.

This is an extremely important point and it illustrates that the surgeon, as a rule, can do very little to prevent the formation of adhesions or their subsequent disappearance. Every precaution should be taken to avoid inflicting undue traumatism on the intestines and peritoneum; the intestines should be kept within the abdomen as much as possible and prevented from being cooled or getting chilled. One of the most important factors is to have "blood free technic," to have the abdomen when closed as dry as possible and to prevent any oozing of blood from occurring.

Walthard is of the opinion that since asepsis has replaced antisepsis the air dried the serous covering of the intestines and therefore advocated moist asepsis. In 1895 there was a wide discussion regarding this matter by Zweifel, Schauta, Skutsch, Thaufer and Uhlmann. These men pointed out that dry asepsis did not cause adhesions to any great extent, and that some operators had more cases of postoperative ileus following moist asepsis than before.

Wormser reported five cases of severe postoperative ileus in a short time after the beginning of the use of moist asepsis. One of the most essential things, in my mind, is the avoidance of much gauze packing. I believe it to be an important factor in the production of adhesions. In my work I have largely abandoned it; I use gauze drainage, but protected by rubber tissue, so that the peritoneum of the intestines does not stick to the gauze. The use of castor-oil and other cathartics is of doubtful value in my mind.

PROGNOSIS.

The prognosis of postoperative mechanical ileus is better than the prognosis of paralytic or adynamic ileus. It depends largely on how soon operative procedures are brought about, and still further it is naturally influenced by the nature of the original illness which calls for laparotomy, and the nature of the causes of the obstruction. If the original condition was a simple one, calling for an operative procedure that was not complicated, the causes of the obstruction in many cases can be easily removed at a second operation; but, if the adhesions be due to inflammation or abscess formation, such as is seen in complicated appendicitis as a result of drainage or what not, the difficulty with which the adhesions become loosened is much more pronounced. The possibility of reinfection is very great; the prognosis in such cases is very much worse.

In my own experience with postoperative ileus and from the study of the few cases I have had, I believe that by carefully noting the warning symptoms occurring after operation that it is not difficult to make a diagnosis at a time sufficiently early that operative in-

tervention will offer a fair promise of success. In a case where there is any doubt, I always have the stomach washed out and give absolutely nothing by mouth, relying on enemas of physiologic salt solution. Now, if it be noted after the usual therapeutic measures fail that there is still acute, abdominal pain, persistent vomiting and high leucocytosis, with inability to get movement of bowels or passage of gas, and there is still tenderness over seat of pain, with evidence of peritoneal shock or depression, I am convinced that prompt operative relief is called for and should be executed speedily.

THE SITE OF INCISION.

The selection of the incision varies. Usually I think the right or left rectus incision is to be preferred; I prefer not to go in at the site of the old incision, which is usually (in the infected cases) an unhealed wound from the drains that have been used in the primary operation. If it is an early case I believe in searching for the obstruction, finding it, and relieving it if possible without a resection. In the later cases where the intestine above the point of obstruction is much distended and ballooned, filled with fluid contents, and the seat of the obstruction difficult to find without undue shock, an enterostomy should be done as a quick operation, for the mortality following resection in these late distended cases is extremely high. The enterostomy will get rid of the foul, poisonous intestinal contents and prevent further autointoxication which is killing the patient, and a second operation can be done, if necessary, later. The earlier the operation can be done the greater the chance of doing a complete operation with success. It is surprising to note the immediate change in the picture; there is a sudden transition from great suffering to comparative relief; pain ceases and vomiting stops at once. The pinched, facial expression changes and improves. This is especially seen in these cases of the strangulation variety where the vessels of the mesentery have been involved in the pinch.

RESULTS.

No results in any surgical work are more gratifying than those following a successful operation for the relief of strangulation ileus. From the study of my own cases it is noted that in the majority of the cases they have appeared early, before the patient has left the hospital, usually between ten days and three weeks following operation. In this series there are eight cases which occurred early and the causes of the obstruction were acute adhesions. The earliest case noted occurred on the fourth day, and the latest one on the twenty-third day. All of them occurred before the patients left the hospital.

One (Case 2) was due to an acute strangulation of a knuckle of small bowel in the fossa of Treitz. One (Case 13) due to Meckel's diverticulum; one (Case 18) from pressure of large pelvic abscess; seven cases occurred at various intervals, from several months to several years, following primary operations due to adhesions. Only one case (Case 3) in this series was caused by the late results of a pinched bowel following strangulated hernia. The seat of the obstruction in all of these cases was found in the small intestines, generally somewhere near the lower ileum. In three of the fatal cases (Cases 10, 11 and 12) there was associated with the condition of obstruction, peritonitis at the time of the operation, and in two of these cases it was difficult to say which preceded; whether the obstruction was followed by peritonitis, or the peritonitis followed by obstruction. They died from the results of continuation of the peritonitis, the obstructive symptoms having been overcome. In this list of nineteen cases there have been fourteen recoveries and five deaths, making the percentage of recovery 73 per cent.

CONCLUSIONS.

1. Postoperative ileus is by no means a rare condition.

2. The percentage of cases following laparotomies of all kinds ranges anywhere from one-tenth of 1 per cent, to 2 per cent.

3. The differential diagnosis between the pseudo-postoperative ileus and the true mechanical ileus in the early stages is exceptionally difficult.

4. Prognosis in true mechanical ileus is far better than adynamic ileus. In the absence of infection the prognosis is generally good.

5. The chief factor in the causation of ileus is adhesions, and the only rational method of dealing with such cases is prompt operative interference.

CASE 1.—Miss M. was admitted to St. Joseph's eighteen months after operation for appendectomy, with symptoms of intestinal obstruction which had existed one week. When the abdomen was opened under ether a rupture of the intestine was found which was due to strangulation by a band of adhesion in the right iliac fossa the result of gauze drainage. Resection of the gut was ineffective, death occurring on the following day.

CASE 2.—C. H., male, aged 16, admitted April 24, 1902. Previous operation, appendectomy for acute, gangrenous, perforated, suppurative appendicitis with general peritonitis; a large quantity of gauze drainage used. The appendix was removed; abdomen was full of pus everywhere, up under liver, down in pelvis; four incisions were made in order to get thorough drainage.

Through these openings the peritoneal cavity and intestines were flushed out with physiologic salt solution and free drainage put down in pelvis on either side, consisting of gauze and rubber tube combined, and the same character of drainage was used through and through from front to back. Patient made an uninterrupted recovery from the general peritonitis; he drained for some time and left the hospital, thirty-nine days after entrance, apparently entirely recovered. He had a small granulating surface in right side. He returned to the hospital forty-three days following previous operation with pronounced symptoms of intestinal obstruction. Two days before his admission he was seized with sudden, severe cramps in abdomen around the region of umbilicus, radiating in various directions; immediately following these cramps he began to vomit, and vomiting and pain were persistent. There was very little peristalsis noted and only slight, if any, abdominal distension. Leucocyte count was high, 40,000; there was no increase of temperature noted, and pulse gained in rapidity; slight wound which had not entirely cicatrized up from previous operation; other wounds healed.

Operation.—Operation was done on day of entrance, April 24, 1902. Incision made through left rectus, and as soon as peritoneum was opened bloody serum was noted in abdomen, and ballooning of small intestines which were excessively engorged, congested, and dark in color. The obstruction was due to a loop, not larger than 1½ or 2 inches, of small intestines having been pushed into and caught in the fossa of Treitz.

Constriction was so tight I thought bowel would give way, but the marked congestion of bowel soon grew better and contents passed on into distal end of bowel. To my great surprise very few adhesions were found in abdomen; this I thought would be the cause of the obstruction on account of the serious peritonitis he had had so recently, as above stated. The entire peritoneal cavity and intestines seemed free of adhesions. Abdomen closed without drainage. Patient immediately ceased vomiting and the wound healed under one dressing. Good recovery.

CASE 3.—Miss M. M., aged 50. Primary operation November 13, 1902, for acute, strangulated, femoral hernia. She made an uninterrupted recovery. My attention was not called to her until Jan. 18, 1903. Examination revealed definite postoperative obstruction; the obstruction was not complete, but I said she should be operated on, but operative interference was declined until January 23. The obstruction was now complete and I sent her into hospital and operated on the morning of the twenty-fourth.

Operation.—When the abdomen was opened the coils of small intestines were found stiffened, ballooned, and distended, and in searching for the seat of obstruction it was found to be in this knuckle of bowel which had been strangulated in November. The loop had never recovered from the pinch, it had cicatrized down and had completely obstructed the small intestine. It was some several feet away from ileocecal valve. Patient was in a most unpromising condition, and a lateral anastomosis was made, side-tracking off this obstructing loop, but as the operation was done late, and the patient's condition was so bad, the outcome was not successful and she died within the next thirty-six hours. This is the only case in all of my hernia work, strangulated or non-strangulated, where postoperative ileus followed. Diagram (Fig. 3) indicates seat of stricture.

CASE 4.—F. L., male, aged 29, admitted March 17, 1903. Primary operation for acute, perforated, suppurative, postcecal appendicitis. Gauze drainage was used freely; tucked off post-cecal cavity. It was noted at time of operation that there was a knuckle of small bowel adherent to the side of the pelvis; this was freed and gauze tucking placed in this region. All went well with him until evening of March 31, when obstructive symptoms began; pain persisted, vomiting was continuous; he had no fever, but marked increase in leucocytes, 25,000. There was a complete change from a convalescent to a dying patient; whole expression changed; pinched, hollow-eyed, pulse increased in rapidity.

Operation.—Operated twenty-four hours from onset of symptoms; incision made through right rectus; small intestines were found ballooned as soon as abdomen was opened, and numerous tight adhesions were found down in right iliac fossa adherent to drain tract from previous operation; one loop was entirely obstructed by a band made up of adhesions encircling and completely shutting off lumen; this was dissected loose and obstruction released. Abdomen was closed, vomiting stopped immediately, and patient made an uninterrupted recovery. He was seen August 31 of same year; was entirely well and had a good abdominal wall.

CASE 5.—W. L. T., aged 40. Symptoms of intestinal obstruction developed three weeks after appendectomy followed by peritonitis. The abdomen was opened, the obstruction relieved, the abdomen closed without drainage. Vomiting stopped immediately, wound healed under one dressing, and he was allowed to convalesce, but a second operation was necessary to close the fecal fistula.

CASE 6.—Miss S. F., aged 48. Obstruction following hysterectomy; ileum found gangrenous; operation unsuccessful.

CASE 7.—Miss M. B., aged 24. Obstruction a year after appendectomy without drainage, but slow healing in consequence of infection and removal of sutures. Operation with good recovery.

CASE 8.—Miss M. V. H., aged 12. Obstruction eighteen days after appendectomy with gauze drainage.

Operation.—On June 11, 1904, I shut off drain track as best I could, opened abdomen through right rectus. A lot of thin, bloody serum was found in the abdominal cavity and the small intestines were ballooned, distended, congested, and on tracing these distended coils down to right ileocecal region they were found completely strangulated by adhesions absolutely occluding bowel. Coils below seat of obstruction were collapsed and pale. The adhesions were broken up and the lumen of bowel freed without injuring bowel wall. The peritoneal surface of bowel was torn in several places in getting it up, and peritoneum was whipped over with fine silk. As soon as the obstruction was released the contents in the afferent loop passed on into the collapsed loop, showing that the obstruction was released. The patient was profoundly shocked and it was feared she would die on the table. Physiologic salt solution was given freely and reaction was prompt, vomiting ceased at once, and she went on to a perfect recovery.

CASE 9.—Mrs. W. B. T., aged 45, had obstruction seven years after double oophorectomy.

It was impossible to locate the point of obstruction, but it was manifest that such existed. She had no fever and leucocytosis of 24,000.

Operation.—Nov. 6, 1904, I opened abdomen through right rectus, and as soon as peritoneal cavity was opened a quantity of dark, muddy seropurulent fluid escaped; the small intestines were markedly engorged, of a deep red color and considerably distended. On searching in the upper abdomen I pulled up a knuckle of small intestines where a constricting point had held it tight; distal to this the bowel had collapsed and the afferent loop was markedly distended and congested; this point of obstruction was in the small intestines about 18 or 20 inches from the ileocecal valve, and was due to a knuckling of the intestinal wall on itself; the peritoneal surfaces were stuck together, making a knuckle at the point where the adhesions had held it. In separating this exudate, which was thrown out between the two surfaces of the peritoneum, the wall of the bowel looked ugly, black, and a little area of gangrene was unquestionably present; lumen of the bowel was not opened. By separating these adhesions and opening up the kinking, I was able to pass my little finger through the lumen of the bowel by invaginating the bowel on it into this strictured area, and gradually got it opened up in this wall, so that the gas and contents of the intestine passed through. This seemed to give sufficient opening, and I deemed a lateral anastomosis, which I had almost concluded to do, unnecessary. As she was practically in the beginning of a general peritonitis I desired to do as little as was possible to give her relief. A knuckle of the small intestines nearer on to the ileocecal valve was adherent by a tense adhesion to the anterior abdominal wall; there were other adhesions down in pelvis, but none seemingly doing harm. The acute distension of afferent loop subsided and abdomen was closed without drainage. She made an uneventful recovery and remains well to-day.

CASE 10.—M. R. P., male, aged 25, admitted March 19, 1904. Primary operation, appendectomy for gangrenous appendicitis, with abscess. Drainage. March 23 he vomited and had pain in the abdomen. All efforts to move the bowels were ineffectual.

Operation.—Operated on March 25, 1904; opened abdomen in midline and found small intestines stiff, distinctly engorged, congested and distended. Searching for some cause for the distension, I passed my hand down to his right side where appendix had been removed, and found the drain track shut off from the general abdominal cavity, and found there a knuckle of small intestines tightly tied down by inflammatory exudate, obstructing the lumen of the bowel at this point. On pressing it down in the pelvis I found an additional coil which was obstructed by being held by inflammatory exudate, which went to make up the wall of an abscess, which was found in the pelvis. After this was pulled loose a large abscess was found filling the pelvis and several coils of intestines sticking around, making up the wall of the above-mentioned abscess. On these coils of intestines was thickened, stiff, fresh exudate, which stuck the coils of intestines together to roof in the abscess; the abscess was evacuated, wiped out, and large bits of sterile gauze drainage tucked down into pelvis to drain it. The intestines were, as I said before, deeply engorged, and there was a beginning diffuse general peritonitis. He became profoundly shocked on the table and did not respond to the operation; his shock increased and he died the following morning.

CASE 11.—H. D. B., male, aged 26. Obstruction following appendectomy. Operation to remove knuckling of small intestine unsuccessful; continued obstruction necessitated enterostomy, which was performed without relief.

CASE 12.—M. F., male, aged 24. A few days after an exploratory operation for examination of the kidney, persistent vomiting began, leading in a few days to a condition for

which it was determined to operate. Numerous knuckles of intestines were found adherent to cicatrix with complete obstruction of intestine about four feet from the ileocecal valve. Although the obstruction was relieved by operation, the injury to the intestine resulted in death in about a week's time, probably from peritonitis.

CASE 13.—R. M., male, aged 11. Obstruction due to Meckel's diverticulum occurred two years after operation for appendicitis. Operation; recovery.

CASE 14.—Miss A. M., aged 34. Mechanical intestinal obstruction twelve years after double oophorectomy and hysterectomy. First operation gave only partial relief; second likewise; third operation was followed by permanent relief.

CASE 15.—Miss M. S., aged 24. Mechanical postoperative ileus following curettement. Obstruction due to the wrapping of small intestine around a mesentery held fast by adhesion from old peritonitis. Recovery after operation which involved great shock and necessitated the injection of salt solution while patient was on the table.

CASE 16.—Miss M. M., aged 22. Obstruction following curettement in which the abdomen had not been opened.

Operation.—May 24, 1906, her condition was most unpromising. The abdomen was filled with dark, bloody fluid, the intestines intensely congested and bound down by adhesions in two places and almost the entire length of the small intestines was twisted around on the mesentery in the form of a volvulus, and the mesentery was so tightly twisted that the vessels were strangulated and apparently gave rise to this thrombosis. Uninterrupted recovery followed.

CASE 17.—Miss E. S., aged 17; admitted June, 1906. Primary operation by another surgeon, appendectomy and nephrotomy in 1904. This was an incomplete mechanical obstruction from adhesions. Uninterrupted recovery.

CASE 18.—Miss E. C., aged 17; admitted Nov. 17, 1906. Primary operation, appendectomy for acute, gangrenous appendicitis, with general peritonitis; appendix was removed, and abdomen drained with gauze drainage and large tube in pelvis, and patient put up in Fowler's position. On the morning of December 4, I found she had obstruction.

Operation.—I opened down again into pelvis and evacuated a large quantity of pus which had caused the obstruction of bowel; this obstruction was of a septic character. It was noted a few days following the secondary exploration of the pelvis for drainage that the bowel wall in the drain track became more and more distended and finally ruptured, and a large fecal fistula formed. In this way the bowel emptied itself and the distended abdomen went down.

Gradual recovery from the septic condition followed. The second opening of the abdomen showed no adhesions.

CASE 19.—Spastic ileus following appendectomy. Recovery. This was a chronic case, and the vomiting, the principal symptom, was due to the bowel being caught and held by adhesions from the former operation.

DISCUSSION

ON THE PAPERS BY DRS. LENNANDER, M'CLURE, CANNON AND MURPHY, ROBERTS, MARTIN, MUNRO AND MAYO, IN THE SYMPOSIUM ON ILEUS.*

DR. S. J. MELTZER, New York, stated that while he did not relish the idea of discussing the paper of a man who is not present and can not controvert his argument, yet he was persuaded to enter into a discussion of that paper by the belief that the majority of surgeons entertain the same views as expressed in the paper by Professor Lennander with regard to the question of pain in abdominal organs. Professor Lennander's paper, he said, contained three main statements. One is that in the many laparotomies which he has performed under local anesthesia he has invariably observed that the gastrointestinal canal is not sensitive to pain. The second statement is that there are no nerve fibers going to the abdominal organs. The third is that the abdominal pain which well and sick people actually do feel is due to some irritation of the parietal peritoneum. Dr. Meltzer claimed that the last two statements are mere hypotheses; only the first statement is a fact and a fact which he did not intend to question. On the contrary, he was deeply impressed with the painstaking careful method by which Lennander established this fact, a fact which was observed by many who paid attention to that question. In a long series of experiments carried out on dogs by Dr. L. Kast and Dr. Meltzer at the Rockefeller Institute, they established beyond a doubt that the intestines of dogs are very sensitive to pain, and that this sensitiveness is greatly increased by inflammation.

Dr. Meltzer suggested that one might think that the difference is due to a difference of animals, that the intestines of the human animal have no nerve fibers for pain, while the intestines of the other kind of animal, the dog, have. That is, to a degree, true. The intestines of rabbits, for instance, do not seem to be sensitive to pain. But the intestines even of rabbits are not deprived of pain fibers. Electric stimulation of the mesenteric nerve fibers accompanying the blood-vessels causes pain. In looking for other explanations, Kast and Meltzer discovered that cocain has the property of abolishing pain not only locally, but also in distant parts, through the circulation, especially in the intestines. In the case of dogs, which before have shown a great sensitiveness to pain, if a small dose of cocain, one-sixth or one-third of a grain, is injected anywhere, preferably in a muscle, within two or three minutes the sensitiveness disappears completely. Not only does the pain disappear, but the animal is also quieted in a remarkable degree.

Lennander, in all his laparotomies, used five centigrams of cocain. Kast and Meltzer therefore suggested that, possibly, the absence of pain in the gastrointestinal canal in the human being during laparotomy may be due to the use of cocain. Of course, Dr. Meltzer said, there is a difference in the weight between the experimental dog and the operated human being, a very great difference; but they found that one centigram of cocain might have the same effect on a dog weighing fifteen kilos as on a dog weighing four or five kilos only. He suggested that five centigrams might be a sufficient dose even for a human being.

While it is true that the intestines of dogs are sensitive to pain, Kast and Meltzer found that this sensitiveness disappears temporarily if the opening of the abdomen and the escape of the intestines occur rapidly. The sensation of pain would then disappear for five or ten minutes and sometimes for a much longer period of time. Sometimes the sensation of pain never returned, and the animal went later into shock. During the period of mere painlessness the blood pressure remained high and the heart-beats were unchanged.

In Dr. Meltzer's opinion this disappearance of pain in that case is one of the early symptoms of shock, a symptom from which the animal recovered. He does not think that shock is due to a fall of blood pressure, but that loss of pain, increase of heart-beats, fall of blood pressure, and perhaps still some other functional changes are correlated symptoms due to the onset of something else, and this something is the development of a state of inhibition.

With regard to the profound effect which the simple opening of the abdomen has on the motor conditions of the gastrointestinal canal, Dr. Meltzer said that if one stretch out a normal rabbit on its back, cut off the hair and watch the abdomen, he will discover, without any trouble, that the stomach and cecum show steady, strong rhythmical movements. But open the abdomen under any precaution and with any rapidity, and not a trace of these movements can be discovered. The opening of the abdomen causes their disappearance. In experiments carried out by Dr. Auer and Dr. Meltzer, they firmly established for the cecum that the disappearance is due to reflex inhibition. The cut and the opening of the abdomen inhibit the motor phenomena of the gastrointestinal canal.

Dr. Meltzer also suggested that as for the motor phenomena the simple incision and opening of the abdomen causes in some species of animals an inhibition of the sensation of pain. In conclusion, Dr. Meltzer stated briefly and emphatically that from observations made at laparotomies no unqualified conclusions can be drawn as to the actual state in normal conditions.

* The papers of Drs. Lennander, Roberts and Cannon and Murphy appeared in THE JOURNAL, September 7, those of Dr. Munro and Mayo, September 14.

DR. W. G. MACCALLUM, Baltimore, regarded the paper by Dr. Cannon as of first importance in connection with the distinction between the two types of alteration in the motility and power of motility of the intestinal tract; that is, as the result of changes in the walls of the intestinal tract and changes in the innervation of this tract. He cited two observations which support Dr. Cannon's conclusions very well. One of these illustrates the change which takes place in the wall of the intestine itself and which may confirm, in a way, the remarks made as to the effect of peritonitis on the motility of the intestines. This was a case in which there was every symptom of intestinal obstruction quite high up in the intestine. At the operation there was found to be no sign of a mechanical obstruction to the intestine, although certain portions of the intestine, notably the duodenum and jejunum, were quite rigid. The patient died soon after the operation, and at the necropsy there was found no obstruction of the intestine of organic character, but the entire upper part of the small intestine was converted into a rigid tube like a garden hose. At the operation it was noted that this did not exhibit any signs of peristalsis. Macroscopically and microscopically it was determined that this was due to an inflammatory process in the intestinal wall. It was infiltrated with leucocytes and streptococci. A phlegmonous enteritis had affected the wall of the intestine and had caused a paralysis so complete as to give rise to symptoms of obstruction. Dr. MacCallum thought that, to a certain degree at least, this same process offers an explanation of the paralysis of the intestinal wall in peritonitis.

The other case illustrated the effect of the disturbance of innervation. The case was observed by Dr. Halsted. There were manifested all the symptoms of intestinal obstruction, with great distension of the intestine and vomiting. An operation was undertaken for the relief of this condition, but no obstruction was found. Later, at the necropsy, there was found a dissecting aneurism which had resulted from a break in the wall of the aorta high up. There occurred an infiltration of blood into the walls of the aorta and retroperitoneal tissues, which extended quite low down into the lumbar regions. This, Dr. MacCallum thought, was probably an affection of the splanchnic nerves, the result of the infiltration of blood and the stimulation of the nerves. He believed that these observations fall in line with Cannon's results and, perhaps, confirm them.

As to the experimental work carried out at the Johns Hopkins University, and mentioned by Mr. McClure, Dr. MacCallum emphasized what he said and gave it as his conviction that here they had to deal with symptoms of intoxication rather than with any nervous disturbances. It was remarkable, he said, to notice the alterations which took place in the contents of such obstructed intestinal loops, as far as the development of bacteria was concerned. There are relatively few bacteria in the upper part of the intestine in the normal state. It was impossible to cultivate many bacteria from that portion of the bowel; but after the obstruction had occurred, the whole obstructed portion acted exactly as a test tube culture put in a thermostat. The intestine became filled with masses of bacteria.

As to the migration of the bacteria, in connection with what Dr. Mayo said, Dr. MacCallum is convinced that bacteria do not wander through the intestinal wall, unless there is disturbance of nutrition, as in strangulation of the bowel, when there takes place a rather rapid migration of the bacteria. Without any disturbance of the circulation it was not possible to determine the presence of bacteria either in the intestine or in any other organ or tissue, but in the process of distension which occurs after obstruction, there very rapidly occurs a disturbance of nutrition of the wall over the distended portion. Dr. MacCallum stated that the consequent disturbance of the circulation, as has been pointed out by Kocher, is the cause of the formation of ulcers, which as Mr. McClure said, were spoken of as "Dehnungsgeschwuere" or distension ulcers by Kocher. Unless, then, there is disturbance of nutrition in the intestinal wall, the bacteria are confined to the intestine and there is absorption of toxic products only into the general circulation.

DR. J. W. DRAPER MAURY, New York, spoke of the work done at Columbia University, where they studied the effect of blockage of the intestine in what has already been alluded to as the "aseptic area." Almost all of the work has been done in the primitive foregut; that is, in the gut arising from it. The technic was as follows: The intestine was closed at a point varying from two centimeters oral to the bile duct to a point thirty-five to forty centimeters aboral to it. The closure was not made by ligature because it was thought not sufficient to close it, but the bowel was cut and turned in so as to be certain of the closure. A piece of twine was placed so as to cut out a piece of intestine and stomach on the principle of the McGraw ligature. This removes a triangular piece in from seventy to one hundred hours. The stomach and this loop are blocked absolutely for a specific time. This time, although varying somewhat in different individuals, is, on an average, the same. It was noted that if the obstruction was made from one to thirty-five centimeters aboral to the bile duct, the dogs invariably died of tetanic convulsions. If, however, it was made aboral to the thirty-five centimeter line, the animal lived until this triangle cut out and gave drainage. If the drainage was instituted at the time of the operation, either of the stomach or of the loop, by an enteroenterostomy or by an open enterostomy, the dogs always lived. The dogs also lived if instead of making the opening aboral to the duct it was made oral. A portion of the pylorus may even be removed. This involves a greater nervous element so that one can hardly consider shock to enter into the thing at all.

Thus if the obstruction be placed at the pylorus, the dogs will survive a complete closure of the stomach until this triangle cuts out and apparently suffer no discomfort. Dr. Maury thought that these cases prove that the convulsive agent in the bile is the cause of death in certain forms of high intestinal obstruction.

Apropos of what Mr. McClure said Dr. Maury stated that in some work done at the laboratory for Dr. Blake they occluded portions of the colon, after cleaning them out and then left them in place. They have done only a few of these, but the dogs lived, and although the occluded part of the intestine was cleaned out mechanically, on examination, some months later, it was found full of material of a fecal odor. He was very much interested to know why they did not die if death from obstruction is due to bacterial infection. Toxins would presumably be absorbed as readily from such an occlusion as from an obstruction. This duodenal loop, in most of the cases observed, had not been dilated materially. They have tried to drain this loop by a tube into the stomach, thinking that pylorospasm might have something to do with it, but the animals died just the same. Cases blocked just aboral to the duct of Santorini terminated fatally, and cases blocked 35 centimeters aboral to it did not. This, and the interesting work done by Dr. Meltzer on the toxicity of the bile, led them to believe that there must be some relation between the bile or the pancreatic juice and this convulsive death.

This work was reported before the Academy of Medicine last month, and Dr. Abbe thought that there was ground for the belief that the pancreatic juice or the bile, either in combination or alone, were responsible. They have transplanted the duct bearing portion of the duodenum. This is not an easy operation, but it can be done by infolding and then transplanting down into the ileum so that the bowel receives wherever desired the bile and pancreatic juice. An analogous condition can also be attained, he said, by the operation of cholecystenterostomy. Their results are not positive as yet, but they think that the toxic element in high obstruction may be of biliary rather than of bacterial origin.

DR. JAMES F. MITCHELL, Washington D. C., having become convinced by a series of observations of the truth of Lennander's findings, that is, that the seat of intestinal pain is in the parietal peritoneum, said that he was much interested in Dr. Meltzer's first report of his work in this field. He thought it would be very instructive, if one could examine the peritoneum of human beings uninfluenced by any drug. Therefore he selected two individuals far removed in the scale of intelligence, realizing the difference in the grade of sensibility of the two persons, and did two explorations, the first on a very in-

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telligent and well educated man; the second on an ignorant negro. The first operation was an exploratory laparotomy on an educated white man for suspected carcinoma of the stomach. The second was done on a colored man with a large irreducible inguinal hernia. In the first case no preliminary dose of morphia was given. The man was placed on the operating table and the field of operation prepared. With normal salt solution, a wheal was produced in the skin as in the ordinary procedure with cocain, except that the wheal was made much larger in order to produce greater tension. The skin was incised through this wheal. The production of the wheal caused no discomfort; but the incision elicited a complaint of pain, in striking contrast to an incision made under cocain infiltration. The anterior sheath of the right rectus muscle was opened and the muscle fibers separated. The posterior sheath and peritoneum were opened in a similar manner and a clamp placed on either edge of the parietal peritoneum. The patient complained bitterly at each step of the incision, and when the peritoneum was clamped cried out with pain. All manipulations were now discontinued for some time, allowing a rest, until the patient said he felt perfectly comfortable. The omentum was then picked up with a clamp, care being taken to avoid the parietal peritoneum. The omentum was clamped and then torn slightly till a bleeding point necessitated the placing of a ligature. In reply to questions the patient stated that there was no sensation. The transverse colon was seized with a clamp and pinched till a distinct imprint of the serrations was left on its surface. The patient said he felt nothing. A clamp was placed on the suspensory ligament of the liver; there was no sensation. The colon was held and its surface rubbed with gauze: there was no pain. Traction was made on the omentum and on the colon and the patient complained of pain. Traction on the suspensory ligament of the liver also caused pain. The parietal peritoneum was rubbed gently with gauze, the patient immediately tightening his abdominal muscles and crying out with pain. In the second case no preliminary dose of morphia was given. The skin was infiltrated with salt solution and an incision made extending somewhat below the external ring. The injection was made rapidly and as thoroughly as possible, producing a wheal much larger than that customary with cocain. The anesthesia produced was slight, the patient complaining as the incision was made. The sac was opened for a distance of several centimeters, the patient complaining as the peritoneum was cut. Small intestine presented and protruded into the wound. After a few minutes' rest, when the patient expressed himself as feeling perfectly comfortable and free from pain, the intestine was seized with a clamp, rubbed with gauze and pricked with a needle. There was no pain, no sensation whatever. The intestine was gently lifted out of the sac without traction, was handled with instruments, with the fingers and with gauze without producing any sensation. When the intestine was further withdrawn so that the mesentery was stretched, the patient complained of a dragging pain and nausea. At this point the skin was injected with 1:1000 cocain plus adrenalin and the incision prolonged upward. The external oblique muscle was divided and the ilioinguinal and iliohypogastric nerve injected with 1 per cent. cocain. The operation was then continued. Just before closing the sac the appendix was inspected and its removal advised, to which the patient consented. The appendix was seized with a clamp and brought through the internal ring into the wound and its base exposed without any difficulty. Traction on the appendix caused the patient to complain of a dragging and nauseating pain which he referred to the region of the umbilicus. The mesentery of the appendix was ligated with fine silk and divided. The tightening of this ligature caused the pain described above. A cuff of the outer coats of the appendix was turned back about its base, and in reply to a question the patient stated that he felt nothing. Care was taken during this procedure to avoid traction, the cecum lying in place at the internal ring. The base of the appendix was clamped, crushed, and burned across with a cautery; there was no sensation during these procedures. A purse string suture was placed about the base of the appendix in the cecum, turning in the stump of the appendix. There was no pain. The small intestines were again tested with negative findings as to sensibility. The edge of the sac was now clamped and drawn on bringing forth a complaint of the same dragging and nauseating pain. The operation lasted two hours, and was completed without any further complaint. The pulse at the beginning of the operation was 60 and at its close 60. The highest pulse rate was 70. This occurred first, when the skin incision was made under salt solution infiltration, secondly, during the division of the neck of the sac, and again during traction on the mesentery of the appendix. These two observations seemed to show exactly the same conditions which are encountered when operating under cocain anesthesia.

DR. CARL BECK, Chicago, called attention to one point in connection with what Dr. Martin mentioned as to the diagnostic value of the Roentgen ray in intestinal obstruction. This work, he said, has been developed by Holzknecht and Tonas of Vienna. During the past year Dr. Beck examined a number of cases by a method of systematic and repeated exposure at regular intervals after meals and was able to make a diagnosis in some cases in which otherwise the diagnosis by the usual means is impossible. He has been able to bring to operation some very early cases of carcinoma, of adhesions, of the intestinal tract, etc.

DR. JOHN B. MURPHY, Chicago, took this subject from the laboratory to the bedside where surgeons meet it. Nine years ago, he said, he published a classification of ileus and endeavored to give a definite meaning to the term, retaining the term ileus and carrying with that this meaning: Ileus is a complexus of symptoms, occurring, usually in a fairly regular form and order and represented by pain, nausea and vomiting, meteorismus and coprostasis. One must come to the bedside with these four essential symptoms, and arrive at some definite conclusion for action or non-action. Dr. Murphy divided ileus at that time into two classes—dynamic, meaning obstruction to the lumen of the bowel by excessive power of the bowel; adynamic, meaning a paralytic ileus or absence of power in the bowel. If the surgeon will take the intestinal tube and picture it in his mind's eye as an ordinary mechanical tube with the power of expulsion in its own walls, and that power controlled by the nerve supply, ileus is not a dark or disagreeable subject. Dr. Murphy agreed that there have been a number of splendid points brought out by the laboratory work in illustrating subjects that are important. He was pleased that Dr. Meltzer still maintains that there is pain in the intestinal wall under certain conditions. It is there at the bedside. In the last experiment referred to, there was pain elicited when traction was made on the liver ligament. If one take the intestines of dogs on the table and apply traction, the same pain can be elicited as when making traction on the mesentery.

The symptoms of ileus, Dr. Murphy said, in the order of their importance, represent pain, which is usually present, and shock. The intoxications, he said, occur later in the lower intestinal tract, less violently, if it is intoxication that kills, which he still doubts. He had a case, that of a man with strangulation of eight feet of the upper intestine right below the beginning of the jejunum. The man died in forty-nine hours from shock. Take the same amount of intestinal strangulation, in the lower ileum or even in the large intestine, where the intestine is distended to an enormous degree, and there is great shock from the overdistension but not from the absorption. There is still another element, he said, in favor of absorption, which is very striking, and that is, that if one has operated in a case of intestinal obstruction, a nice clean operation, the intestine is returned to the abdomen, the patient collapses when the intestinal contents pass down into the lower segment.

DR. JOHN B. DEAVER, Philadelphia, said that meeting this subject practically and not in the laboratory, one encounters three types of paresis of the intestines—that following immediately operation; that the result of mechanical intestinal obstruction, and that the result of septic peritonitis. The former, in the majority of instances, should not occur. Paresis immediately following operation is in most instances due to prolonged operation, unnecessary intra-abdominal manipula-

tions and prolonged anesthesia. Paresis the result of mechanical obstruction, in the majority of instances, should not occur, because cases of intestinal obstruction should be recognized and operated on before the intestine becomes distended. Possibly, he said, this is not true in all instances, but it is true of the majority of cases under observation in the hospital. The type of cases are of two classes, the clean and the septic ones. Dr. Deaver has seen very few cases of obstruction occur where the abdomen was clean; where there was absence of sepsis. When this did occur it was in cases where the intestine was attached to the stump, or the omentum became elongated and acted as a band, or where Meckel's diverticulum existed. But the majority of cases he sees are septic; as appendicitis is the most common affection for which surgeons are called to operate. The great majority of cases of intestinal obstruction are seen following it. We see all varieties of obstruction consequent on sepsis the result of an appendicitis, such as the evacuation of a large abscess and contraction of the abscess wall resulting in angulation and intestinal obstruction.

Dr. Deaver believes, too, that after these operations very careful feeding should be instituted. He does not feed his patients early, and he gives very little. Frequently for one week he feeds them per rectum with saline solution and predigested food, and does not allow solid food for two weeks. By this care he believes it possible to overcome to some extent the tendency to the occurrence of intestinal obstruction. It is a mistake, he said, to place too much faith in enemas, particularly the giving of large enemas and purgatives. He has seen obstruction caused by them, and paresis of the large bowel following the giving of a very large enema. Dr. Deaver also deems it a mistake to eviscerate or do too much handling. The early operation for obstruction is the *sine qua non*. He does not wait until the bowel is distended or until the patient begins to vomit fecal matter. He opens the abdomen on the appearance of paroxysmal pain and nausea. He has great faith in the early application of the aseptic scalpel. The percentage of intestinal obstruction, in septic cases, is about one in sixty.

To illustrate the importance of early operation: Last year, in the Mary J. Drexel Home, Dr. Harry C. Deaver, and he, had ten cases of intestinal obstruction occurring after operation on septic cases of appendicitis. All of the patients recovered, but all were operated on immediately after the development of the pain. They did not wait for the appearance of all the classical symptoms of obstruction, otherwise there would have been a mortality.

DR. THEODORE A. MCGRAW, Detroit, said that one thing is very important in the matter of intestinal obstruction for the general practitioner, and that is to recognize early the symptoms of this condition. There are certain symptoms of intestinal obstruction from mechanical causes about which, he thinks, the general practitioner is a little in the dark. It has always seemed to him that in such cases the physician is inclined to wait too long instead of recognizing the symptoms at the very earliest stage of the disease. The symptoms in the very early stage of a mechanical intestinal obstruction are, first, pain and vomiting. In the early stages there is no distension. The practitioner must not wait for distension. When there is pain, vomiting and obstinate constipation, there is almost always obstruction. And, by the way, he said, there is an absence of fever. There is no fever in the early stages of intestinal obstruction. It is important to recognize these conditions in their very early stages. A patient seized with pain and vomiting, may have acute pancreatitis and inflammatory disease. If so, he will have fever, but he would not have fever in the early stages of intestinal obstruction. If there is pain and vomiting from inflammation of the mucous membranes, there is no constipation, but diarrhea. Dr. McGraw insisted that with the combination of symptoms of pain, vomiting, constipation without fever, without distension, for the distension comes later, without tenderness, for there is no tenderness at first, the patient surely has an obstruction of the bowel. At first there is no tenderness. One can handle the abdomen with perfect impunity so far as causing pain or tenderness on pressure is concerned. When such a condition exists, it is intestinal obstruction and one must proceed accordingly.

DR. M. H. RICHARDSON, Boston, said that postoperative ileus is of the greatest possible interest to the surgeon. The most important thing connected with so broad a subject, and the chief cause of painful suspense after an abdominal operation, is to tell what is really ileus and what is not. When, after a clean abdominal operation, the patient has pain, distension, and vomiting, without fever, perhaps, or even with it, it is impossible to tell whether one is going to have a general peritonitis and death or a day or two of discomfort and an easy convalescence. John Homans used to say, he said, that the worst symptoms after an abdominal operation are vomiting and distension, that he never could feel sure that they were not the beginning of a fatal peritonitis. Dr. Richardson agreed, in the main, with what Dr. Deaver said on this subject. He regards abdominal pain as the first and most important symptom in any abdominal case. When that pain is accompanied by distension, vomiting, and constipation, he looks on the condition as very grave. But, he said, there is a post-operative condition not infrequently seen which can not but excite grave apprehension, and yet it often subsides—and that is the condition in which there is pain, distension and vomiting, without fever. Dr. Richardson did not agree that fever must always be present before the symptoms can be regarded as alarming. Distension, pain and vomiting, he said, are the most serious symptoms of postoperative ileus. In many cases these trying symptoms disappear; in many they persist till death. In the one case they mean little and indicate no intervention; in the other they mean much and demand intervention. What more important thing, then, than the accurate diagnosis of the postoperative condition? His practice is not to reopen the abdomen unless the indications are strong. One's experience in these cases is often distressing, for the uncertainty is necessarily great, and on certainty of diagnosis depends the question of opening the abdomen. The condition either is practically of no serious account or is practically fatal, even if an operation is done. In one case the patient goes to a fatal end in spite of all one can do, and in the other she recovers spontaneously. There is either a fatal lesion or none at all. The latter is a peritoneal condition which, for lack of a better name, Dr. Richardson has spoken of as a peritonism—a peritoneal irritation without sepsis, in which operation is not demanded; indeed, in which it is worse than useless, for under catharsis it spontaneously subsides. When the symptoms persist, in spite of all efforts, they mean not a mechanical construction, but a general peritonitis. Dr. Richardson regretted to say that, in his experience, the majority of cases that begin with vomiting and distension go on to a peritonitis, on which no treatment, whether operative or palliative, seems to exert any beneficial influence.

DR. JOHN C. HEMMETER, Baltimore, said that when one reflects on the experiments of Aldor on the extreme distension of the bowel with water and air, and still no pain, and the experiments of Lennander on the extreme contraction of the gut to a thin, white hard string, the patient conscious, and still no pain, and then the other enterprising invasions of the peritoneum and still no pain, the average practitioner comes very quickly to the conclusion that under no conditions has a human being a right to a bellyache. There are three sets of nerves to the intestine—motor, sensory and secretory. Cannon has shown beyond doubt that one can check the motor nerves by crushing the testicles. There is no doubt about that, because one can see it. It can be objectively demonstrated. But a similar crushing experiment on animals can also check the secretory nerves. Why doubt that one can check the sensory nerves or inhibit their action? The reason the inhibition of sensory nerves is not so universally convincing is because it can not be demonstrated. This, said Dr. Hemmeter, is not a case of the physiologist trying to thrust knowledge on the surgeon. Quite the contrary. Lennander is a surgeon, and he is working in physiology. He says that there are no sensory nerves in the intestine, although Berkley and others demonstrate abundant plexuses of nerve fibers from the sympathetic and the central nervous system. If it ever becomes necessary to open abdomens without general anesthesia, the absence of

pain, so far from meaning that it guarantees freedom of manipulation, indicates the greatest care in manipulation, and Dr. Hemmeter agreed absolutely with Dr. Meltzer that it is an indication of shock.

REPORT OF TWO THOUSAND OPERATIONS FOR THE RADICAL CURE OF HERNIA

PERFORMED AT THE HOSPITAL FOR RUPTURED AND CRIPPLED FROM 1890 TO 1907.

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NEW YORK CITY.

The year 1890, the beginning of this series of cases, marks an important milestone in the history of the radical cure of hernia. This was the year that Bassini's epoch-making paper describing his method for the radical cure of inguinal hernia was published in the *Archives f. Klin. Chir.*, giving additional report of the results in 261 cases. Halsted's method, in many points similar to Bassini's, had been briefly described in the first number of the *Bulletin of the Johns Hopkins Hospital*, 1889, although Bassini's had been published in an earlier paper read before the Italian Surgical Society, 1888.

But it was not until 1890 that the two methods were prominently brought before the profession. Prior to this time, beginning with Steele's first operation for the radical cure of hernia in 1874, Czerny's in 1877, Marcy's in 1878, one method after another had followed in rapid succession. While the immediate results of some of these methods were very good, particularly in the hands of their originators, the sum total of results was far from satisfactory and there was in 1890 a strong tendency on the part of the more conservative surgeons to regard with doubt the claims of any of the methods to the designation "for the radical cure of hernia" for the reason that the statistics of the most reliable sources showed a proportion of from 30 to 40 per cent of relapses within the first year. In addition the risks of operation for hernia at this time were by no means to be ignored. Four of the largest hospitals in London in 1890 showed a mortality of 6 per cent. The enthusiasm for the radical cure of hernia was beginning to wane when the methods of Bassini and Halsted were published.

The two methods differed in several important points: In Halsted's method the cord is transplanted more externally so that it lies just beneath the skin and superficial fascia, whereas in Bassini's operation the cord is covered by the aponeurosis of the external oblique as well as the skin and fascia. The most important difference, however, is that in the Halsted method the internal oblique muscle is cut upward from one to two inches before it is sutured to Poupart's ligament. The results of operation have shown this step to be entirely unnecessary. In many cases, we believe, the cutting of the internal oblique greatly increases the chances of recurrence and weakens the very structure we must rely most on for radical cure. Another point of difference is the resection of all but one or two veins of the cord. Here again the results of the method, showing atrophy of the testicle in a considerable proportion of the cases, have proven its disadvantage.

The unquestionable superiority of Bassini's method to the earlier methods, as well as to those since devised, is shown by the fact that this operation with slight modifications is to-day the operation of choice in practically all the clinics of the world. The secret of the success of Bassini's operation, we believe, depends largely on the fact that it was the first operation in which the attempt to cure the hernia was based on a true appreciation of the etiology of hernia.

In none of the earlier methods was it possible to remove thoroughly the sac flush with the peritoneal cavity. At present we are beginning to appreciate the fact that the great predisposing cause in all inguinal, and probably the majority of femoral, hernia is a congenital or preformed sac, and, on the basis of this, the first and essential principle of a radical cure must be the thorough removal of such a sac.

The principles of Bassini's method are easy of understanding and simple of performance. The first and most important principle consists in the cutting high up of the external oblique aponeurosis, thus giving free access to the internal ring, thereby making it possible to completely remove the sac well beyond the neck, thus obliterating entirely any funicular process. Second, suturing the internal oblique muscle to the shelving process of Poupart's ligament. Third, and least important, as results have shown, is that of transplanting the cord to a higher position than normal, by suturing the internal oblique muscle underneath the cord instead of over it, then covering the cord with the aponeurosis of the external oblique and, lastly, with the subcutaneous fascia and skin.

That only the first two steps are the essential ones to success is shown by the fact that the last step may be dispensed with with almost equally good results. "Suture of the canal without the transplantation of the cord," the other steps being the same as in Bassini's operation, is now regarded by many surgeons as superior to the original or typical Bassini method.

This method has been frequently called the "Ferguson method" in Chicago, and Ferguson himself claims to have been the author of it. He first published[1] it in 1900, yet Dr. Bull and myself began using it in 1892 and published reports of cases in which this operation was done in 1895, 1897, 1898 and 1900, as follows:

Annals of Surgery, April, 1895 (Coley): Whether the transplanting of the cord is to be regarded as essential to the highest degree of success in hernia operations it is hardly possible to state positively. It may be that the high ligation of the sac, and the perfect closure of the canal made possible by slitting up the aponeurosis has quite as much to do with the good results as transplanting the cord. Coley's own cases operated on by this method have none of them relapsed, and some have gone more than three years.

Am. Jour. of the Med. Sci., May, 1895: The Operative Treatment of Hernia in Children with a Report of One Hundred and Thirty-Three Cases. Methods of Operation and Technic. Ligation of the sac and suture of the canal, without transplanting the cord, was the method employed in ten cases.

Ann. of Surg., March, 1897: The Radical Cure of Hernia, with a Report of Three Hundred and Sixty Cases. During the past four years Drs. Bull and Coley have been operating on a series of patients in the same way as Bassini's method, with the exception of the transplantation of the cord. This series is yet too small to justify conclusions.

Ann. of Surg., November, 1898: Observations on the Operative Treatment of Hernia at the Hospital for Ruptured and Crippled. (Bull and Coley). Methods and Results of Operations. Bassini's method, with kangaroo tendon, 342 cases; Bassini's method, with silk sutures, 1 case; slitting up aponeurosis of external oblique with high ligature of the sac and closure of canal in three layers with kangaroo tendon, without transplanting cord, 34 cases.

International Text-Book of Surgery, Warren and Gould. (Copy received at the N. Y. Academy of Med., March, 1900). Suture of the Canal, as in Bassini's Method, Without Transplantation of the Cord: The writers (Bull and Coley) have employed this method, which is exactly the same as Bassini's, with the exception that the cord is not transplanted, but allowed to drop back beneath the lowermost layer of buried sutures; the internal oblique is sutured to Poupart's ligament and the aponeurosis is sutured separately with sutures of chromicized kangaroo tendon; the skin is closed with fine catgut. The results have been nearly as good as those following Bassini's method proper.

In these earlier reports we stated that the operation had much to commend it and that more time and a larger series would be required before it could be deter-

1. THE JOURNAL A. M. A., July 1, 1900.

mined whether the transplantation step was necessary or not. It is too slight a deviation, however, for any one to claim it as an original method. It is merely Bassini's operation for inguinal hernia in the female, as published in his original report of 1890, applied to inguinal hernia in the male, the cord, like the round ligament in the former, being allowed to drop back into the lower angle of the wound.

At the Hospital for Ruptured and Crippled we have used this operation in 360 adult cases of inguinal hernia in the female, with only one relapse in a very large strangulated hernia in a woman seven months pregnant. The sac was greatly thickened and inflamed, the tissues infiltrated, and there was little expectation of obtaining a radical cure in this condition. The patient's life, however, was saved and pregnancy was not interrupted. In addition to this, Drs. Bull, Walker and Coley, at the Hospital for Ruptured and Crippled, have operated in 346 cases of inguinal hernia in the male, without transplanting the cord, with only seven relapses. Three of these relapses occurred in the earlier cases, prior to 1892, and the operations were done by the method of Socin and Czerny and should have been included in the same group. This leaves four relapses in 340 cases of inguinal hernia in the male, in which the patients were operated on by the method of suturing the internal oblique to Poupart's ligament without transplanting the cord, or 1.1 per cent.

For comparison with this we have a series of 1,185 cases of inguinal hernia in the male, in which the cord was transplanted according to the typical Bassini method, with nine relapses, or 0.7 of 1 per cent.

A careful study of these relapses is of importance. It will be seen that most of the relapses occurred in the early cases of patients operated on between 1890-2-3, when the technic was necessarily less perfect than later. These statistics show that in children at least the results are almost as good whether the typical Bassini operation is performed or whether the step of transplanting the cord is omitted.

The charge has often been brought against our statistics that they deal only with children, in which it is assumed that operation is much more simple and that perfect results can be obtained from almost any method. In Ferguson's recent work on "Modern Operations in Surgery" the statement is made that practically all of Coley's operations were on children. While it is true that a majority, 1,034 in number, have been performed on children, it is not fair to deny Coley the privilege of having an opinion on the subject of hernia operations in adults, as he has also operated on 900 adult patients. Our conclusions are, therefore, based on a careful study of the results of operations on both children and adults. We have found the results in adults to be little different from those in children. That hernia in children can be cured by any method, no matter how indifferently performed, is a mistaken view, as is shown by the earlier statistics of the Hospital for Ruptured and Crippled, containing a group of twenty patients operated on between 1888 and 1890, of which 40 per cent. relapsed within the first year.

In 900 cases of hernia in adults operated on by Coley there have been thirteen relapses—1.4 per cent. It should be noted that most of the Bassini relapses have occurred in direct herniæ. Here the only way of closing the opening above the pubic bone is by transplanting the cord, and the Mayo's, who have given up the transplanting step as a routine measure, still perform it in direct hernia. These cases are very difficult to cure in any method of operation, and as the Bassini method is still performed in the great majority of cases for direct hernia, we necessarily find a larger proportion of relapses accredited to Bassini's method than we would if the direct herniæ were operated on by the non-transplanting method. We never transplant the cord in hernia associated with undescended testis for the reason that in these cases we obtain a from ½ to ¾ in. longer cord by not transplanting. The early objections to Bassini's method, recently revived by Ferguson, have proved to be of no practical weight. The cord is not injured by the transplantation, orchitis does not follow if the veins are not removed and the operation is properly performed. That there is no functional impairment of the testicle is proven by the fact that many of our boys operated on when from 12 to 18 years of age, have grown up, married and have children.

As to the length of time required for the performance of the two methods, this is practically the same; either can be done in ten minutes in uncomplicated cases, and we have frequently done the operation in seven minutes.

SUTURE MATERIAL.

The choice of the proper suture material for the buried sutures, we believe to be an important element in the technic of operations for the radical cure of hernia. We have so frequently in earlier papers pointed out the disadvantages of non-absorbable sutures, that it seems unnecessary to more than refer to the matter here. That non-absorbable sutures, in a certain number of cases, cause slowly-healing sinuses, which greatly enhance the chances of relapse, is a fact that has been confirmed by upwards of 30 personal observations. In some of these cases sinuses have developed nearly four years after the introduction of the sutures.

Non-absorbable sutures were first used in operations for hernia, because at that time there were no methods known, by means of which absorbable sutures could be perfectly sterilized. Now, that catgut and tendon may not only be absolutely sterilized, but chromicized so as to remain unabsorbed for any desired period of time, we believe there is no reason for any longer continuing the use of non-absorbable sutures. In the series of cases which forms the basis of the present report, with the exception of half a dozen of the earlier cases, kangaroo tendon, chromicized so as to remain unabsorbed for from 3 to 4 weeks, has been the suture material uniformly employed. Non-chromicized catgut was used for the ligatures of the arteries and, in the great majority of cases, for closing the external wound.

Dividing our cases into two periods, i. e., before and after the introduction of rubber gloves, it will be seen that distinct improvement has followed their use: Of 567 cases in which operation was done before the introduction of rubber gloves, suppuration occurred in 25, or 4.4 per cent.; and of 1,433 patients operated on since the use of rubber gloves suppuration was observed in 20, or 1.4 per cent. We believe that after one becomes accustomed to operating with gloves, operation can be performed quite as rapidly and easily as without them.

For several years we have been more and more impressed with the belief that the great majority of cases of inguinal hernia, in children at least, the rupture was due to the presence of a preformed, or congenital sac. Our statistics at the Hospital for Ruptured and Crippled seem to confirm this opinion.

Hamilton Russell of Melbourne, Australia, in a series

of articles in the *Lancet*, during the past six years, has expressed the conviction that practically all inguinal herniæ, except the direct, both in children and adults, are due to a preformed sac or an unobliterated portion of the processus vaginalis. More recently he has gone even further and included most cases of femoral and some of direct hernia. He has collected much data in support of this theory and as far as oblique inguinal hernia is concerned, we are inclined to believe it is correct. Russell has certainly demonstrated the necessity of abandoning the words "congenital" and "acquired" as used at present by writers on hernia.

The term "congenital sac" as ordinarily used, means a sac communicating with the tunica vaginalis. Hence, the sacs of all inguinal hernia in female children, even though they existed at birth, and all sacs in male children not communicating with the tunica vaginalis, are called acquired. According to this definition many sacs of unquestionably pre-natal origin are classed as acquired.

To avoid this confusion, we believe it wise to give up the use of the words "congenital" and "acquired" and adopt instead the classification of total or partial funicular sacs. This, of course, would apply only to oblique inguinal hernia. In direct hernia and femoral hernia the sacs are, we believe, in the great majority of cases acquired, although in a certain number of cases it has been proven that preformed or congenital sacs are found also in these types of hernia.

At the Hospital for Ruptured and Crippled 1,528 male patients with inguinal hernia have been operated on. In 646 of these cases the sac was of the so-called acquired type, in which there is no communication with the tunica vaginalis; in 363 the sac was of the so-called congenital variety, in which there is communication with the tunica vaginalis; in 519 cases the type of sac was not stated.

All of these patients were children, in many of whom the hernia had been noticed since birth. Hence, it is fair to assume that in a great majority, the sac was of prenatal origin, irrespective of the fact whether it communicated with the tunica vaginalis or not.

INDICATIONS FOR OPERATION.

Although there is a growing tendency at present, especially among English and French surgeons, to extend the indication for operations for the radical cure of hernia, to very young children and even infants, we still believe that a considerable number of children under the age of 4 years are cured by a properly applied truss. There is little risk from strangulation during this trial period of truss treatment. Our own statistics at the Hospital for Ruptured and Crippled do not show a single death from strangulation in infants or young children. On the other hand, the risk of operation during infancy is decidedly greater than in older children, as is shown by the statistics of Stiles and Carmichael. If a child has reached the age of from 3 to 4 years and still has a hernia, we advise operation. In all children over the age of 4 years we no longer advise preliminary truss treatment, for the reason that the chances of a cure are smaller and the possibility of a relapse after a supposed cure from truss treatment greater.

In cases of hernia complicated with irreducible hydrocele, or adherent omentum, both of which conditions are comparatively rare in children, mechanical treatment is of no avail, and immediate operation is advised. Likewise, we never advocate truss treatment in femoral hernia, inasmuch as there is no possibility of curing the condition by mechanical means and there is nothing to be gained by delay.

From May, 1890, until July 1, 1907, 2,032 operations[2] for the radical cure of hernia were performed at the Hospital for Ruptured and Crippled:

Fifteen hundred and twenty-eight were for inguinal hernia in the male; 374 were for inguinal hernia in the female; total number of inguinal hernias, 1,902.
Twenty were for femoral hernia in the male; 56 were for femoral hernia in the female; total number of femoral hernias, 76.
Twenty-nine were for umbilical hernia.
Eighteen were for ventral hernia.
Six were for epigastric hernia.
One was for lumbar hernia.

There were a total of 137 cases of hernia in adults, of which 86 of the inguinal herniæ were in the female, 30 of femoral hernia, 15 of umbilical hernia, 5 of ventral hernia, 1 of epigastric hernia.

In 24 cases the operation was for strangulated hernia; of these 17 were in children, 7 in adults. There were no deaths among the children, and only one in the adults, which was a strangulated umbilical hernia in a very stout woman.

Of the children 10 were under the age of 2 years; 6 under 1 year of age. The youngest was an infant 13 days old, with a hernia of 14 hours strangulated. An operation for its radical cure was performed. The patient left the hospital in 3 days and when last seen, five years after the operation, there was no recurrence.

In every case, with one exception, strangulation was due to the tight external ring, and not to the neck of the sac, which has long been regarded by most writers on hernia as the frequent cause of strangulation. In one case, a strangulated sigmoid hernia in a child 3 years of age, strangulation was apparently due to a fecal occlusion, the gut being markedly distended by some semi-solid feces of about the consistence of putty.

In several of these cases the condition of the child at the time of operation was extremely critical. In one case a temperature of 107 F. followed the operation and the child was kept in a continuous bath of a temperature of 98 F. for nearly 24 hours. The child made a good recovery.

CONTENTS OF THE SAC.

The appendix alone was found in the sac ten times and was removed in most cases. The cecum and appendix seven times; the cecum alone eighteen times; the sigmoid alone once, cecum and sigmoid once. The tube and ovary were found five times; the tube alone once; the ovary alone, twice; a total of 8 cases. The bladder was found in 3 cases.

UNDESCENDED TESTIS.

We have operated in 114 cases of undescended testis, 25 of which were of the inguinosuperficial variety, the sac emerging from the external ring and passing upward to the anterior superior spine, resting on the aponeurosis of the external oblique. This condition, while regarded by previous writers as extremely rare, is, we believe, much more common than has been supposed. Moscheowitz[3] states that only 17 cases have been recorded in the literature.

There has been no recurrence in any of our cases of hernia associated with undescended testis, although in a certain proportion the testis has retracted up to the region of the external ring, where it has remained and has not materially increased in size.

2. These operations were performed by the following men: Dr. Bull, 327; Dr. Coley, 1,027; Dr. Walker, 506; assistant surgeons, 112.
3. Medical Record, 1902.

The ages of the children ranged between 4 and 14 years; 54, or about one-half of the entire number, were over 10 years of age. We seldom advise operation in these cases in children under the age of from 5 to 6 years. We do not consider it wise to operate at the age of 2 years, as advised by some of the French surgeons. In cases in which the testis can not be palpated, operation had best be deferred until a later time. We no longer advise suturing or fixation of the testis to the bottom of the scrotum, believing it possible in most cases, by freeing the cord sufficiently to bring the testicle into the scrotum and where it will remain without suture. The method we have employed is very similar to that advocated by Bevan of Chicago. We do not transplant the cord in these cases, inasmuch as by not transplanting we gain from ½ to ¾ in. in the length of the cord. In no case has castration been performed.

The danger of malignant disease developing as a result of an undescended testis, we believe, has been exaggerated. No case of sarcoma or carcinoma of the undescended testicle has been observed at the Hospital for Ruptured and Crippled, at least, during the last twenty years, although it is but fair to state that one of us has seen sarcoma of the undescended testis in two cases observed outside of the hospital.

UNUSUAL CASES.

We have observed two cases of umbilical hernia of the cord. This is an extremely rare condition. Furthermore, we have seen 3 cases of tuberculosis of the hernial sac; one of multiple cyst of the omentum; 7 cases of hernia with a definite traumatic history, i. e., inguinal herniæ appeared within a very few days after a local injury. In all of these cases there was found a well-developed sac, similar in every respect to the ordinary preformed or prenatal sac; and there is every reason to believe that in these cases the sac had existed since birth and the local injury merely constituted an exciting cause.

While we have seen three of lumbar hernia in children, only one of the patients was operated on. In this case the operation was done by Dr. Bull and the child is now well and without relapse, ten years later.

UMBILICAL HERNIA IN CHILDREN.

This condition can nearly always be cured by mechanical means. The method of treatment we employ at the Hospital for Ruptured and Crippled is to apply a small pad, usually made of a wooden button mold, 1 inch in diameter and covered with adhesive plaster, directly over the umbilical opening; this is held in place by a strip of zinc oxid adhesive plaster, 2 inches wide, which entirely encircles the abdomen. This rarely causes irritation and can be left in place for a week or ten days, when it should be changed.

We have never seen a belt or truss that was of much value in umbilical hernia in children, for the reason it is most difficult to keep it in position. It may be necessary to continue this treatment for from 1 to 2 years. Occasionally a hernia persists, in spite of mechanical treatment, in which case it is wiser to operate. We have operated in only 13 cases of umbilical hernia in children under the age of 14 years at the Hospital for Ruptured and Crippled since 1890.

FEMORAL HERNIA.

Seventy-six operations have been performed for femoral hernia, 56 female and 20 male, without a single relapse. The method employed in nearly all cases has been the following: Oblique incision parallel with and about ⅛ or ¼ in. below Poupart's ligament; high ligation of the sac, with thorough removal of all the overlying extraperitoneal fat; closure of the femoral ring by a purse-string suture of kangaroo tendon. The suture is introduced through the outer portion of Poupart's ligament, or the roof of the canal; it passes downward through the pectineal fascia and muscle, or the floor of the canal, then through the fascia lata over the femoral vein, upward, emerging again through the roof of the canal, about ¼ inch from the point of introduction. When tied the roof and floor of the canal are approximated without tension and without pressure on the vein.

This is one of the simplest methods, both in principle and technic. One of us has operated on 125 patients with femoral hernia by this method, without a single relapse. In view of these perfect results, it seems to us unnecessary to employ any of the complicated methods of operation for femoral hernia that have recently been advocated.

FINAL RESULTS.

Eight hundred and thirty-seven cases of inguinal hernia have been traced and were found perfectly sound from 1 to 14 years after operation. Of these:

Two were well upward of 14 years.
Three were well from 12 to 14 years.
Twenty were well from 10 to 12 years.
Fifty-nine were well from 8 to 10 years.
One hundred and eight were well from 6 to 8 years.
Seventy-eight were well from 5 to 6 years.
Seventy were well from 4 to 5 years.
Ninety-three were well from 3 to 4 years.
One hundred and seventy were well from 2 to 3 years.
Two hundred and thirty-four were well for 1 year.

The cases of femoral hernia were traced as follows:

Four cases were traced in which the patients had remained sound from 8 to 10 years.
Three cases were traced in which the patients had remained sound from 6 to 8 years.
Three cases were traced in which the patients had remained sound from 5 to 6 years.
Three cases were traced in which the patients had remained sound from 4 to 5 years.
Four cases were traced in which the patients had remained sound from 3 to 4 years.
Nine cases were traced in which the patients had remained sound from 2 to 3 years.
Eleven cases were traced in which the patients had remained sound from 1 to 2 years.

DEATHS FOLLOWING OPERATION.

Case 1.—Male, aged 9; right inguinal hernia; Bassini operation Feb. 27, 1894. Patient died on the eighth day of double bronchial pneumonia, probably caused by ether. There was no wound infection.

Case 2.—Male, aged 5; right inguinal hernia; operation June 11, 1895; sac very large; cord not found. Suture of internal oblique to Poupart's ligament without transplantation of the cord; time of operation much prolonged (70 minutes). Temperature next morning 104 F., pulse 140. Death 37 hours after operation, due to acute septic peritonitis.

Case 3.—Male, aged 8; Bassini operation, March 1, 1895. Hernia complicated with Pott's disease; patient was in very bad condition at time of operation; took ether very badly. Temperature 12 hours after operation 105.6 F. Wound opened and drained on third day; some pus found. Patient continued to fail and died on the twelfth day. Autopsy showed apex pneumonia, pericarditis.

Case 4.—Male, aged 6; left inguinal hernia; Bassini's operation, June 13, 1903. Rubber gloves used by assistants and operator. High temperature on the night following operation which continued the next day. The wound was opened and extensive infiltration of the tissues was found with a spreading cellulitis. In spite of free incision, irrigation and wet dressing the patient continued to get worse and died on the fourth day, of acute sepsis. This patient was operated on by one of the assistant surgeons.

Case 5.—Male, aged 7; right inguinal hernia, with un-

descended testis. Operation, 1905; the same was easily performed in 15 minutes; the patient took ether well and there were no complications. Twenty-four hours after operation he developed a high temperature and rapid pulse and afterward a slight rash. Pulse and temperature remained very high; the patient was markedly prostrated and continued to grow worse rapidly and died on the following day, probably from scarlet fever, as there were several cases in the hospital at this time. The wound showed no evidence of infection.

Thus we have a mortality of five cases in 1,978 cases of inguinal and femoral hernia, or one-fourth of 1 per cent. We have had one other death following operation for incarcerated umbilical hernia, occurring in a woman 56 years of age, in December, 1906.

RELAPSES.

CASE 1.—Male, aged 10; operation Dec. 12, 1891; Czerny's method; catgut sutures; slight relapse from 1 to 4 months after operation; truss worn for a short time. Examination 12 years later, showed no protrusion; cured.

CASE 2.—Male, aged 13; operation December, 1891; Bassini's method; silk sutures; extensive suppuration; extrusion of sutures; relapse in three months.

CASE 3.—Male, aged 9; operation Jan. 15, 1892; Czerny's method; silk sutures; relapse in three months; reoperated on July, 1892, by Bassini's method; well July 30, 1907, fifteen years later.

CASE 4.—Male, aged 10; Czerny's method; chromicized catgut; relapse sixteen months later; reoperated on by Bassini's method; cured.

CASE 5.—Male, aged 6; operation Aug. 7, 1899; Bassini's method; slight bulging in canal 6 months later; examination six years later, showed condition the same; no protrusion.

CASE 6.—Male, aged 6½; operation Oct. 9, 1894; Bassini's method; small relapse six months later; reoperated on July 19, 1895.

CASE 7.—Male, aged 6; operation Nov. 26, 1897; Bassini's method; relapsed two months after operation.

CASE 8.—Male, aged 5; operation Dec. 27, 1899; Bassini's method; slight relapse; truss for short time; examination showed patient well seven years later.

CASE 9.—Male, aged 12; operation Nov. 21, 1900; Bassini's method; relapse two years after operation; upper scrotal.

CASE 10.—Male, aged 6; operation February, 1901; cord not transplanted; sliding hernia of cecum; relapse after four months.

CASE 11.—Male, aged 6; operation April, 1904; Bassini's method (operated on by assistant surgeon); slight relapse 5 months later; truss 1½ years; examination two years thereafter showed only slight impulse on coughing.

CASE 12.—Male, aged 6; operation June, 1903; Bassini's method; had severe attack of whooping cough four weeks after operation; two weeks later small lump was noticed on coughing; truss was applied and worn for six months; examination two years later showed no swelling on coughing; apparently cured.

CASE 13.—Female, aged 35; operation October, 1904; round ligament not transplanted; relapsed in three months (slight bulging).

CASE 14.—Male, aged 8; right inguinal hernia; operation Aug. 18, 1905; cord not transplanted; recurred 18 months after operation.

CASE 15.—Male, aged 12; left inguinal hernia; operation Feb. 17, 1905; Bassini's method; slight relapse at internal ring two years later.

CASE 16.—Female, aged 35; right inguinal hernia, strangulated twelve hours; very large enterocele; patient seven months pregnant; opened Feb. 15, 1906. The sac and surrounding tissues were infiltrated and edematous and the operation was greatly hurried on account of the patient's condition; the wound suppurated badly; slight infection, and, although pregnancy was not interrupted, the wound was unable to stand the severe strain of labor two months later, and the hernia relapsed shortly afterward.

CASE 17.—Female, aged 38; umbilical hernia; operation June, 1904; vertical overlapping (Blake) operation; relapsed five months later.

CASE 18.—Male, aged 8; operation Aug. 18, 1905; cord not transplanted; other steps same as Bassini; slight relapse eighteen months later.

CASE 19.—Male, aged 7; Operation Feb. 8, 1907; bladder hernia; cord not transplanted; very difficult to close canal; relapse April 10, 1907; slight bulging in canal.

ANALYSIS OF RELAPSED CASES.

One relapse followed operation for a large umbilical hernia (vertical overlapping method). Two relapses followed operation for inguinal hernia in the female. One of these cases occurred in a woman seven months pregnant, with a very large strangulated hernia. The sac, muscle and fascia were all infiltrated with inflammatory exudate. Deep and prolonged suppuration followed. Pregnancy was not interrupted, but shortly after childbirth a recurrence developed.

Of the four relapses which occurred in the 340 cases two were of inguinal hernia in the male, in which the cord was not transplanted, the other steps being the same as the Bassini method. One was a large bladder hernia, one a sliding hernia of the cecum, conditions most unfavorable for a radical cure by any method.

Of the nine relapses occurring in 1,185 cases operated on by Bassini's method (with the substitution of kangaroo tendon for silk used by Bassini for the buried sutures), one occurred during a severe attack of whooping cough which developed immediately after the operation. A truss was worn for a short time and the child was permanently cured without further operation, so that it is hardly fair to class this as a true relapse. In two other cases the relapse was merely a slight bulging which disappeared after wearing a truss a short time. In both of these cases the patients were personally examined and found perfectly well, the one six and the other seven years after operation.

This leaves only six actual relapses or failures to obtain a radical cure by operation, or 0.5 per cent in 1,185 cases operated on by the Bassini method.

CACTUS GRANDIFLORUS AND CACTIN OR CACTINA.

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There has never been an analysis of *Cactus grandiflorus* made and very little is known of its chemistry, nevertheless there are on the market certainly widely advertised proprietary, or semi-proprietary, preparations said to contain definite quantities of cactina or cactin, described as an alkaloid or, less definitely, as a concentration, on which the therapeutic activity of the several preparations depends. While cactin is said to be a *concentration*, the manufacturers of cardiac tonic (cactin) claim that each pillet contains 1/134 grain, a very unusual and minute dose, and explicable only on the assumption that its potency and constancy of composition are comparable to such alkaloids as strychnin and atropin.

Cactus grandiflorus (Linné), *Cereus grandiflorus* (Miller and De Candolle), is a member of a large family, and an understanding of the subject necessitates the

consideration of other members of the cactus family, for there is probably a certain amount of confusion existing in regard to the therapeutic actions of *Cactus grandiflorus* and related cacti. In the same family are found the *C. flagelliformis, C. fimbriatus, C. paniculatus, Opuntia vulg., Melocactus com., Anhalonium Lewinii* and *Mammillaria simplex*. The pharmacologic study of some of the latter seems to show that they have an entirely different action from that attributed to *Cactus grandiflorus*.

Lewin[1] in 1888 demonstrated the presence of an extremely active principle in one of the cacti, *Anhalonium Lewinii*. This substance, while acting as a narcotic on man, produced a remarkable effect on frogs and animals, acting on them much like strychnin and inducing a tetanus lasting for some time.

Heffter[2] examined eight species of cactus and found alkaloids in all of them, from which he concluded that alkaloids are extraordinarily widely distributed in the cactus family. One can not avoid the feeling that this conclusion of Heffter has helped those who were too willing to find alkaloids in *Cactus grandiflorus*.

The alkaloids isolated from different cacti include mezcalin, anhalonidin, anhalonin, lophophorin, anhalamin, pellotin, pectenin and pilocerein. Mogilewa[3] studied these and found that they possessed much similarity of action, all causing slowing of the heart without increasing the volume of the pulse. (Hardly to be considered a digitalis action!) They appeared to exert a narcotic effect on the motor heart ganglia. He concluded that anhalonidin alone might have some action on the musculature of the heart.

Heffter[2] found 8 to 10 milligrams of pellotin to increase the reflex excitability in the frog in thirty to forty minutes and to cause a tetanus lasting from one to three days. A rabbit was rendered convulsive by 7 centigrams, death resulting from 11 centigrams. A sense of weariness and heaviness of the limbs and eyelids followed a dose of 5 to 6 centigrams in man, while marked collapse was reported by Langstein after 1 centigram had been taken by a user of tobacco.[4]

Carl Lumholtz[5] likens the effects of anhalonium to that of coca; he states that this species is used medicinally by the Indians, but he does not mention the use of *Cactus grandiflorus*.

Boinet and Boy Teissier[6] used aqueous and alcoholic extracts of *Cactus grandiflorus*, and an alkaloidal substance, which they called cactin, prepared by a pharmacist after the general method of Pelletier and Caventou for alkaloids, and lixiviation with ether. They found that 2 milligrams of this substance (cactin?) injected into a frog caused a greatly increased systole in ten minutes. It is doubtful, however, if they were dealing with the substance now called cactin, as no chemist of scientific standing has been able to prepare pure cactin. Cactin, according to Kobert,[7] is a glucosidal substance, hence the method of preparation would be different from that used in the preparation of an alkaloid.

A remarkable paper—remarkable from one point of view at least—by a Dr. O. M. Myers appeared in 1891, in which the results were given of a pharmacologic study of cactin. Myers[8] stated that cactina is the proximate principle of *Cactus grandiflorus*, that it was successfully isolated by Frederick W. Sultan, "the well-known pharmaceutical chemist of St. Louis." He quotes Sultan as follows: "The flowers are decidedly richer in active principle, yielding 0.021 to the 1,000, or over 2 per cent." (Sic!).

Since Myers does not state the source of his cactina, and since his paper is used in part in the exploitation of cactina pillets, one is justified in assuming that the cactina he used is identical with the cactina pillets made by the Sultan Drug Company. Either this or the use of Myers' paper by this company is a deliberate fraud.

A glance at the protocols of Myer's experiments shows that he was dealing with a substance resembling strychnin in its action—an action which is absolutely unmistakable. Since, as previously stated, this paper is used in the exploitation of cactina pillets, I shall quote it at some length. Myers states:

> **Therapeutic doses of cactina cause primarily an acceleration of the pulse and a rise in arterial pressure, and secondarily a diminution of both. Cardiac pulsations become arrhythmic and cease in systole. Systole, just before death, becomes incomplete, probably due to superirritability of the cardiac ganglia. Death is preceded by clonic and tetanic convulsions, due to overstimulation of the motor side of the cord. This is not cerebral, as it occurs after section of the cord in the upper cervical region. The motor nerves are unaffected, for, after death, galvanism causes contraction of the muscles.**

The following is taken from the Myers protocols (apparently only two experiments were made): Seventy-two milligrams of cactina injected into a normal dog caused clonic and tetanic convulsions. In one experiment, after cutting the vagi, 2 milligrams were injected, after which galvanism of the cut vagus failed to arrest the heart. (!) The following are samples of Dr. Myers' physiology:

> **After section of the vagi and sympathetic, 32 milligrams maintained a rise of blood pressure and acceleration of the pulse rate, and it is fair to conclude that the drug produces its effect chiefly by direct stimulation of the intracardiac accelerator ganglia.[9] Five milligrams of cactina increased the pulse of a dog from 186 to 222, and the cardiogram, normally showing a pressure of 145 mm., showed a rise to 198 mm. *If in such a dog the spinal cord be cut high up the blood pressure will instantly drop about 20 mm.* This would indicate that the increased pressure was not wholly due to increased cardiac action, but a result of stimulation of the vasomotor centers in the brain.**

(The above italics are mine. I have never heard of an instance where the high blood pressure of a dog did *not* drop after its spinal cord had been cut "high up," except during the *continuous* administration of adrenalin.)

Myers recommends cactina in functional cardiac and circulatory disturbances and for its strychnin-like action on the cord.

The want of space forbids an extensive reference to the article of Gordon Sharp,[10] who reviews the literature of *Cactus grandiflorus* and gives the results of his own observations covering a period of more than two years, during which time he used pounds of the plant. He concluded that it was not of the slightest therapeutic

1. Arch. Exper. Path. und Pharm., xxiv, p. 401, and xxxiv, p. 374.
2. Arch. Exp. Path. und Pharm., xl, p. 385.
3. Arch. Exp. Path. und Pharm., xlix, p. 137.
4. Compare with Myers' results with cactina and the use of that preparation for the "tobacco heart."
5. Unknown Mexico, ii, p. 358.
6. Bull. gen. de Ther., cxxi, p. 342.
7. Lehr. d. Intoxicationen, ii, p. 1220.
8. Cactina: A New and Valuable Cardiac Stimulant. Its Origin, Physiologic Action, Therapeusis, etc., N. Y. Med. Jour., liii, p. 681. (A letter of inquiry addressed to Dr. Myers in regard to the source of his cactina was returned marked: Name not found in the city directory.)
9. Acceleration usually follows section of the vagus alone.
10. London Pract., 1894, liii, p. 101.

value in any condition whatsoever. He found it practically inert in large doses taken by himself, and he and Owens were unable to find any evidences of an alkaloid after repeated examinations of a number of specimens of the plant. He calls attention to a small sugar-coated pill advertised in Great Britain as containing an alkaloidal principle obtained from the Mexican *Cactus grandiflorus*,[11] of which he took forty at a dose without perceptible effect; later he took one hundred of them at a single dose without inconvenience, but he did observe some acceleration of the pulse for which he could not account.

Dr. Rubini,[12] a homeopathic physician, who is credited with having popularized *Cactus grandiflorus* about 1868, used it in doses entirely too small to have any therapeutic value. Dr. F. Ellingwood,[13] an eclectic physician, maintains that *Cactus grandiflorus* is in every way superior to digitalis, but the experiments of Boinet and Boy Teissier are the only ones of which I have been able to find an account which support the view that *Cactus grandiflorus* acts like digitalis, and, as their best results were

Fig. 1.—(Tracing 1.) Samples of blood pressure tracings in experiment on male dog weighing 9 kg. Showing blood pressure at time of injection (x to x) of cardiac tonic and every 15 minutes thereafter. The horizontal line represents a blood pressure of 80 mm. of mercury.

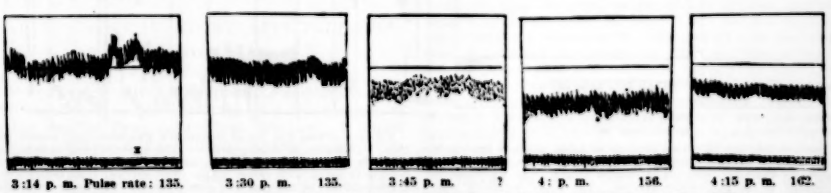


Fig. 2.—(Tracing 1 continued.) Samples of blood pressure tracing in experiment on dog; a continuation of Figure 1. Cactina pillets injected at x. Horizontal line represents a blood pressure of 80 mm. of mercury.

obtained with an alkaloid which no one at this day is able to prepare, we can not give much weight to their testimony.

Clinical testimony is so conflicting that between the extreme views of Gordon Sharp and those of Ellingwood there is room for an honest difference of opinion concerning *Cactus grandiflorus*. Heinz's pharmacology does not even mention cactus among the very large number of drugs having a digitalis action, and Cushny's Pharmacology (3d ed., p. 440) says: "*Cactus grandiflorus* (Cereus), which has been recommended as a substitute for digitalis, has no similar action and does not belong in this series."

Kobert[7] states that *Cactus grandiflorus* contains an alkaloid, according to Dragendorff, and probably a glucosid; he says further: "*Sicher ist dass er wie Digitalis bei Kranken mit Herzkrankheit und Wassersucht verwendbar ist und auch auf Tiere wie Digitalis wirkt.*" ["It is certain that it (*Cactus grandiflorus*), like digitalis, is applicable in cases of heart disease and dropsy and also that it acts on animals like digitalis."] If that is comforting to certain persons, perhaps the following from the same authority may not be: "*Das uns hier interresierende wirksame Prinzip—das glycosidische Cactin ist aber noch nicht reint dargestellt worden.*" ["The active principle that interests us here—the glucosid-like cactin—has not yet been prepared in a pure state."]

It is surprising to find in this connection, however, that Kobert's authority for the statement in regard to its action on animals rests on the two papers which I have shown to be unreliable, viz., those of Boinet and Boy Teissier.

It is obvious from the testimony of reputable men that some of the cacti contain very active principles, and it is quite possible that *Cactus grandiflorus* may at certain times and under certain conditions contain a principle with a strychnin-like action, but it is my purpose in this place to demonstrate that cactina pillets of the Sultan Drug Company have no such action, and, indeed, no perceptible action of any sort so far as the circulatory system is concerned, and that the cardiac tonic (cactin) 1/134 grain, of the Abbott Alkaloidal Company, is equally devoid of any physiologic activity as may be seen by reference to the protocols of my experiments:

EXPERIMENTS ON FROGS.

Two frogs were injected, each with one cactina pillet dissolved in physiologic salt solution. Six hours later one seemed to be slightly depressed and the other showed no effect whatever.

Six frogs were injected in the lymph sac, each with one cactina pillet dissolved in physiologic salt solution. No perceptible effect in the period of observation lasting seven days.

11. Cactina pillets are small sugar-coated pills, said to contain 1/100 grain cactin in each, obtained from the Mexican *Cactus grandiflorus*. They are sold in Great Britain at 36 Basinghall St., London.
12. N. Y. Med. Jour., lii.
13. Med. Record, June 3, 1905, 857.

A frog was given 15 cactina pillets[14] by the mouth. No effect during period of observation lasting several days.

A frog was injected in the lymph sac with 12 cardiac tonic (cactin) 1/134 grain each (Abbott Alkaloidal Company) dissolved in N. S. No effect during period of observation lasting two days.

EXPERIMENTS ON CATS.

Experiment 1.—A female cat, weighing 3 kg., was given 1 cactina pillet per kg. daily for five days, the pulse rate being taken by means of a cardiograph. The daily record was as follows: Before injection (first day), 192; second day, 232; third day, 222; fourth day, no record; fifth day, 184; sixth day, 180. The slowing of 12 beats may be accounted for by ordinary variation, for this same cat subsequently showed a pulse rate much slower than this.

Experiment 2.—Male cat, weighing 3.6 kg. July 8, 3 p. m., pulse rate 174; 3:30 p. m., injected subcutaneously 5 cactina pillets per kg. in physiologic salt solution. July 9, 10 a. m., pulse rate 180.

Experiment 3.—Male cat, weighing 3.6 kg. July 13, 4:30 p. m., pulse rate 172; 4:37 p. m., injected 5 cardiac tonic (cactin) 1/134 gr., Abbott Alkaloidal Company, per kg., in physiologic salt solution. July 14, 10:30 a. m., pulse rate 164.

Experiment 4.—Female cat, weighing 3 kg. July 13, 4:45 p. m., pulse rate 142; 4:50 p. m., injected 35[15] cardiac tonic (cactin) per kg., Abbott Alkaloidal Company, in physiologic salt solution. July 14, 11 a. m., pulse rate 156.

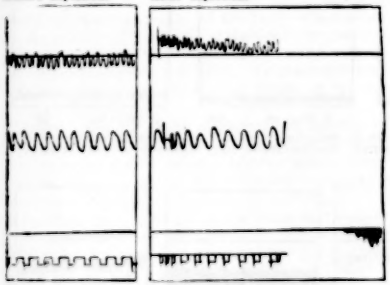


Fig. 3.—(Tracing 2.) Two samples of blood pressure tracing in experiment on mongrel bitch weighing 7 kg. Showing blood pressure before and after injection of cactina pillets. The wavy line in the middle is the respiratory tracing. The upper horizontal line represents a blood pressure of 80 mm. of mercury. Compare this tracing with that in Figure 4.

Not one of the cats in series showed the least effect even from such colossal doses.

EXPERIMENTS ON DOGS.

Six experiments were made, in which from 2 to 25 cactina pillets per kg., and from 2 to 35 cardiac tonic (cactin) 1/134 gr. each, Abbott Alkaloidal Company, per kg. dissolved in physiologic salt solution were injected directly into the blood stream through the femoral vein. Since not the least effect in any way resembling that of strychnin or digitalis was perceptible in any case, the protocol of but one experiment will be given, in which both preparations were given without perceptible effect (Figs. 1 and 2); and one in which 5 cactina pillets per kg. (the equivalent of more than 300 pillets for a man weighing 150 pounds) were injected in the same way. The latter tracing (Fig. 2) shows blood pressure and respiration immediately before, and forty-eight minutes after, administrations of the pillets.

Male dog, weighing 9.0 kg., excellent condition. July 17, 1:25 p. m., 0.01 morphin sulphate hypodermically.

1:37 p. m., 0.02 chloretone in 40 per cent. alcohol by stomach. Cannulas into the carotid artery and femoral vein.

Fig. 1. 2:14 p. m., 2 cardiac tonic (cactin), Abbot Alkaloidal Company, per kg. in physiologic salt solution into vein. (A total of about 9 milligrams of cactin.)

Fig. 2. 3:15 p. m., 2 cactina pillets per kg. in physiologic salt solution into vein. (A total of more than 11 milligrams of cactina for the dog, or 20 milligrams of cactin (Abbott's) and cactina combined.)

Time in seconds. Time tracing marks zero blood pressure. The tracing was continuous except for time lost in changing drums—about two minutes in every fifteen. Samples of tracing before injection and every fifteen minutes thereafter are given (Figs. 1 and 2). It will be seen that there was a gradual lessening of the excursion, without any important change in blood pressure, such rise as did occur being due to the increased pulse rate. The pulse rate per minute is given under each section of the tracing.

Fig. 3. July 9, mongrel bitch, weighing 7 kg.

2 p. m., 0.02 gm. per kg. morphin sulphate hypodermically.

2:25 p. m., ether for light anesthesia.

3:33 p. m. (Fig. 3, before injection), blood pressure 77 mm., pulse rate 175.

3:40 p. m., 5 cactina pillets per kg., in physiologic salt solution into vein.

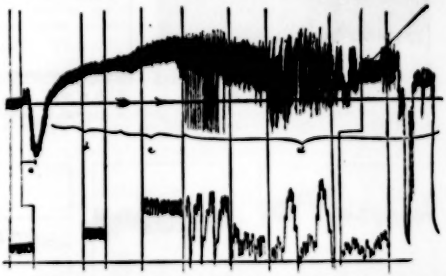


Fig. 4.—(From Fig. 85 of Sollmann's Pharmacology, second edition.) Digitalis on blood pressure. The upper tracing is taken on a slowly moving drum to show the successive effects. The lower tracing is taken with faster speed. The vertical lines indicate the correspondence of the fast and slow tracings. The upper horizontal line corresponds to the original mean pressure; the lower to zero pressure. The digitalis was injected at *a*.

4:28 p. m. (Fig. 3, after injection), blood pressure 84 mm., pulse rate 200.

No slowing, no considerable rise of blood pressure, no stimulation of the respiratory center. Compare tracings (Fig. 3) with those given (Fig. 4) in Sollmann's Pharmacology (second edition, pp. 480, 481), showing the effects of digitalis on blood pressure.

EXPERIMENTS ON RABBITS AND GUINEA-PIGS.

A rabbit was injected hypodermically with 2 cactina pillets per kg. in physiologic salt solution, and a rabbit and a guinea-pig were injected hypodermically with 10 per k g.[16] of cardiac tonic (cactin) 1/134 gr., Abbott Alkaloidal Company. In none of the three experiments could the slightest effect be noticed.

Ten experiments were made on frogs, four on cats, six on dogs, two on rabbits and one on a guinea-pig. In no single instance was there any evidence of a digitalis or

14. Fifteen cactina pillets for a frog are in the proportion of approximately 25,000 for a man weighing 150 pounds.

15. Thirty-five pillets per kg. are equivalent to 2,380 pillets for a man (weighing 68 kg.) 150 pounds.

16. This rabbit, weighing 1.65 kg. (about 3.6 pounds) received a total of 165 pillets, or in the proportion of more than 6,800 pillets for a man weighing 150 pounds.

strychnin-like action or, in fact, of any decided action of any kind.

The pulse rate of the cat normally varies considerably, but drugs with a digitalis action produce a slowing which Fraenkel[17] has termed "colossal," amounting in some cases to about 100 beats per minute..

I have been unable to find the report of a single conclusive piece of pharmacologic work showing that *Cactus grandiflorus* possesses any physiologic action whatsoever; on the other hand, the work of Sayre[18] (and Houghton) points to its entire uselessness, and that of Gordon Sharp, previously quoted, indicates that it is wholly inert.

When one seeks to unravel the tangle involving the work of Myers and the exploitation of the cactina pillets he is forced to one of two conclusions: Either Myers' work was a pure fabrication, or he was dealing not with cactin but with a substance similar in action to the pellotin of Heffter, the action of which resembles that of strychnin to a certain extent. Such an action is demonstrable physiologically with as much ease and certainty as is the case with a simple chemic reaction. But whatever may be said of Myers' experiments (and his protocols show that they are unworthy of serious consideration), it can not be stated with too much emphasis that cactina pillets of the Sultan Drug Company and the cardiac tonic (cactin) of the Abbott Alkaloidal Company are absolutely devoid of any such action as that described by Myers in the article referred to. It may be said with equal emphasis that these two preparations are not only devoid of a digitalis or a strychnin-like action, but they are inert when used on animals in doses that are hundreds, and even thousands, of times as large as those recommended by their exploiters.

Loomis Laboratory, 414 East Twenty-sixth Street, New York.

17. Arch. Exp. Path. und Pharm., ii, p. 84.
18. Ther. Gaz., 1906, xxii, 822.

SALPINGITIS CAUSED BY APPENDICITIS.*

I. S. STONE, M.D.
WASHINGTON, D. C.

A number of cases of suppurative salpingitis have been mentioned in the literature of pelvic surgery as having resulted from appendiceal infection. I intend to add a few cases to those already reported, so as to emphasize the fact that such cases exist and with greater frequency than is generally believed. In my cases I not only observed the appearance of the diseased organs before, during and after removal, but the presence of the diseased and ruptured appendix with the colon bacillus in the pus in the tubes. I observe many different symptoms, as well as marked dissimilarity between such diseased adnexa and those having the more frequent gonorrheal infection. There is also an appreciable difference between the tube with streptococcic invasion and that with gonorrhea. All of these pathologic changes, I think, are characteristic of the peculiar micro-organisms which produce the disease, and each has its own type and life history and selects some special anatomic tissue for its ravages. Thus the gonorrheal diplococcus will close the fimbria and protect the peritoneum until the tubal mucosa has been destroyed and perhaps until rupture occurs from distension. The streptococci or staphylococci cause lymphatic and connective tissue invasion rather than take the course pursued by the gonococci. My observations lead me to believe that the pus from an appendiceal infection, while probably due to the colon bacillus, may be, in part, caused by a mixed infection. At least my investigation only proves that salpingitis can be and is frequently caused by infection which has no other origin than that which came with the infectious micro-organisms found in appendiceal pus.

Deaver and Moore[1] speak of the possibility of right tubal infection through the lymph vessels in the ligament of Claudius. J. B. Sutton reports a case of salpingitis caused by the bursting of an inflamed appendix into the mouth of the Fallopian tube.[2] The symptoms were those of appendicitis, but the pain was localized below that region or nearer the normal position of the tube. The tube and appendix were removed without disturbing their relations. M. Potherat[3] reports an interesting case of associated appendicitis and salpingitis. He calls attention to the usual custom of calling the appendicitis secondary. He declares his case to have been one of primary appendicitis. His patient was unmarried and without any history of genital disease, and was in good health and was suddenly attacked by all the signs of appendicitis. Subsequent attacks of pain drove her to the hospital and to have the operation performed. He reports another case in which the symptoms resembled typhoid fever in a young girl of 17.

That the appendix is responsible for a large number of cases of pelvic peritonitis and resulting adhesions is so well known that I only mention it without discussion, and with the intention of limiting the discussion to acute infectious pyosalpingitis and its results. In order to show that salpingitis may result from an appendiceal infection, I report the following case which leaves no doubt as to its character.

Mrs. C., aged 35, white, mother of two children, and perfectly healthy until Sept. 26, 1905. I saw her first with her family physician, September 29, three days after the commencement of an attack of appendicitis. The physician in charge and the patient lived in a suburb of the city, six miles from a hospital, and having heard of the "Ochsner method" of treatment, he determined to adopt the conservative course. Accordingly I found the patient, a woman of very intellectual type, resolved on a trial of cure without operation. Our decision was to open the abdomen if we could get the patient in the city and in the hospital that same evening. Her pulse was 135, her temperature 102.5, and her bowels had been well cared for by enema and there was absolutely no distension. Her excellent condition (perhaps I should say the excellent condition of her alimentary canal) was undoubtedly due to the very capable management of the family physician. She had not been purged nor had food been administered. On reaching the hospital after a rather rough trip in the ambulance, the patient still declared herself anxious to avoid operation and we waited until a later period. We could now discover a mass at the appendix point, but there was absolutely no evidence of tubal or ovarian disease. Her temperature was reduced to normal on the sixth day of the disease and we opened the abdomen, expecting to find a necrotic appendix. To our surprise and greatly to our instruction there was necrosis of the appendix and a portion of the cecum which appeared to be about the size of a silver dollar. We found the pelvis and infected area pretty well walled off and an ounce of free pus in Douglas' cul-de-sac. The rupture of the abscess in the appendix had occurred recently, for the pelvic structures were not greatly changed in appearance by the contact with very infectious pus. The adnexa were positively not in-

1. Amer. Jour. Med. Sci., N. S., cxxiii, 1902.
2. Brit. Med. Jour., 1905, p. 118.
3. Bull. et Mem. de la Soc. de Chirurg. de Paris, N. S., xxviii 1902, 204.

* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Fifty-eighth Annual Session, June, 1907.

volved and as we saw that nothing short of a resection of the bowel, amounting to excision of the cecum, would suffice if we attacked the appendix, we decided on further delay in radical operation, and, after placing a drainage tube, closed the abdomen. The patient continued to improve until the tenth day, when the temperature and other symptoms plainly showed that the right tube was distended with pus. We opened this through a posteervical incision in the vagina and evacuated a considerable quantity of pus with the odor of that already observed in the pelvis at the first operation.

The patient's condition now improved as before until finally the Fallopian tube on the left side behaved in precisely the same manner and we opened it and secured a complete and satisfactory recovery of the patient. I have omitted the result of drainage of the appendiceal region, at the time of the first operation. A fecal discharge occurred a few days afterward which continued for two weeks, then ceased and the tube was removed. The patient is now in good health.

Many physicians are skeptical of the cause of salpingitis in very innocent young women who ought to be above suspicion. It is a common experience to suspect any woman who has an infectious disease of an ovary or tube. The following case illustrates this statement and shows how easily one may reach a conclusion wrongfully:

Miss ———, white, aged 18, a virgin. There was no question of her excellent character and she had always had good health until 1906, when she was taken ill with appendicitis, having all of the well marked symptoms. Her physician treated her without consultation for nearly two weeks before he realized her condition or consented to have assistance in the management of the case. Finally she was brought to the hospital in a dying condition. Her abdomen was distended and we were led to believe that there were symptoms of salpingitis, and peritonitis from that cause. But on careful examination we came to a different conclusion. Although we drained the pelvis from below, and opened and drained from above the pubis, nothing could save the patient. But we discovered what was sufficient proof to show that the appendix was the cause of the pus collections in the pelvis and the diffuse peritonitis which killed the patient. It may be considered impossible for salpingitis to cause an appendicitis and we found in this case (a virgin) large pus tubes, and a perforated and gangrenous appendix.

There was in this case as in the other, the colon bacillus, and every other indication of the intestinal origin of the infection.

Authors differ greatly as to the possibility of making a diagnosis before operation. Without quoting those who are ranged along opposite sides of the question, I think it is the rule for the Fallopian tube to become infected secondarily or as a result of the appendiceal disease.

This would be in line with the pathology, as we believe it to be found that whether there is lymphatic or direct infection it must come from the appendix and not from the tube to the appendix. Our position and our cases show direct purulent infection of the Fallopian tube by the colon bacillus directly from the ruptured appendix.

In support of this position, I also add the case of J. Bland Sutton, already mentioned, and that of Geneu,[4] who reported a similar case in which the appendix was actually inserted into the inflamed tube. I can not believe that any direct or indirect infection has been shown conclusively to have proceeded from the tube to the mucosa of the appendix, although I do not question such a possibility. The development of pelvic peritoneal adhesions may involve the appendix indirectly by adhesive bands which constrict and perhaps close the lumen of the appendix. This would be a secondary appendiceal complication, but one which would be difficult of diagnosis and one which I insist should be called an association of the two conditions.[5]

4. Faure (J. L.): Gynecologie, 1901, vi, p. 32.

DISCUSSION.

DR. L. TOD GILLIAM, Columbus, Ohio, agreed with Dr. Stone that it is not often, if ever, the case that the appendix is infected from the tube. Kelly, he said, has demonstrated the fact that there are no lymphatics passing directly between the tube and the appendix, and, on the other hand, it is known that the gonococcus does not go along the lymphatic channel, but along the mucous surfaces. Therefore, he can not conceive of an appendix being infected from its peritoneal covering, but believes that instances of infection from the tube are exceedingly rare. There must be an abraded surface or vulnerable point somewhere to permit of infection. On the other hand, he continued, it is possible for a tube to become infected from the appendix. It is his opinion, however, that the colon bacillus will not infect a mucus-covered surface where there is no abrasion. It may be that in the cases cited there was a mixed infection—a gonococcus plus the streptococcus, and it is to the latter one must look for the penetrative infection, a property not possessed by the gonococcus. Dr. Gilliam believes that the colon bacillus may go along the mucous surface without producing severe infection. Where the appendix is in the hollow of the tube, in the fimbriated extremity of the tube or anywhere near it, one can understand how the germs might get into it, how the tube might become infected through any lesion that destroys the continuity of its surface. Dr. Gilliam is convinced that where there is an infection of the tube from the appendix it is a mixed infection and not a pure colon bacillus infection.

DR. S. W. BANDLER, New York City, did not feel in a position to make an absolute differential diagnosis between infection of the tubes and ovaries subsequent to appendicitis, and infection of the tubes in which the involvement of the appendix is subsequent to the tubal disease. That appendicitis may result in salpingitis, he said, no one is disposed to question. He has found in these cases that the condition is not so much that of endosalpingitis as of adhesions around the tube, or perisalpingitis. An illustrative case was that of a girl of 17, on whom he operated for double salpingo-oophoritis. The ovary on the right side was quite large; adhesions were marked, and the omentum was adherent to the abdominal wall and to the bladder, completely walling off the appendix region from the general peritoneal cavity. The adhesions were so slight and elastic that it was believed they followed an appendicitis. The appendix was separated from the cecum by the space of an inch—a case of spontaneous amputation of the appendix. It seemed absolutely certain that the salpingo-oophoritis had followed the appendicitis. Subsequent operations have shown Dr. Bandler that in those cases, in which there is a predominance of the salpingo-oophoritis on the right side, with a cystic ovary, especially those cases in which the ovary contains only one cyst the size of a walnut, with slight and elastic adhesions, the condition occurred subsequent to appendicitis. On the other hand, with pyosalpinx due to gonorrhea, and with salpingitis due to gonorrhea, the appendix often is involved. At all events, he said, it is often impossible to say whether the involvement of the appendix is primary to the salpingitis or *vice versa*.

DR. I. S. STONE, Washington, D. C., regretted that in the examination of the specimen he did not ask for a definite diagnosis of the pus. He suspected the colon bacillus, but was not in a position to speak positively, except to say that the appearance of the gonorrheal pus tubes is absent in the variety of infection under discussion. The fimbriæ are closed readily in the gonorrheal variety, and, generally, before there is much peritoneal infection; whereas, in the other varieties, they are not closed readily. Dr. Stone has seen them repeatedly when they were not closed. When the pus comes from the exterior of the tube the peritoneal surface will be more or less involved, when the fimbriæ may reopen.

5. I take special pleasure in calling attention to a trenchant article by Dr. Haldy on this subject in the Trans. So. Surg. and Gyn. Assn., 1903, p. 263. I fully coincided with his views until I saw a certain case like mine, above mentioned, caused by direct contact with appendiceal pus.

Clinical Notes

A CASE OF ACETANILID POISONING FROM HEADACHE CAPSULES, WITH EXTREME TACHYCARDIA THE DOMINANT SYMPTOM.

FRANK B. WYNN, M.D.
INDIANAPOLIS.

History.—On July 28, 1907, Dr. A. W. Hon was called to see Mrs. F., a rather delicate woman, aged 44. She was complaining of great prostration, nausea, some dyspnea and a sense of oppression and pain in the precordial region.

Examination.—I saw the patient in consultation July 30. An examination at that time revealed, besides the symptoms above enumerated, the following: Normal temperature; slight puffiness of the skin, notably of the hands and face; mild degree of palor, but no cyanosis; abdominal viscera normal; lungs negative except accelerated respiratory movements, but not a labored breathing; urine and blood negative. The conspicuous sign was an extreme grade of tachycardia. The pulse, although weak, was palpable at the wrist, but could not be counted there. The rate, as determined by auscultation and a sphygmographic tracing, was 210 (Fig. 1). The heart was small; its sounds were clear, with accentuation of the second pulmonic. The Riva-Rocci instrument registered a blood pressure of 80 mm.

Further History.—On August 2, Dr. A. C. Kimberlin was asked to see the patient when there was noted some improvement in the rate (204), as well as the quality of the pulse

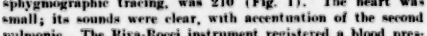


Fig. 1.—Sphygmogram showing tachycardia. Rate 210. Time markings one-fifth of a second. Jaquet instrument.

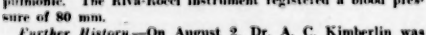


Fig. 2.—Tachycardia slightly improved over that shown in Figure 1

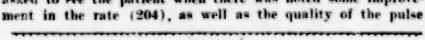


Fig. 3.—Sphygmogram showing a pulse rate of 100, the sixth day after the poisoning.

(Fig. 2). The blood pressure had risen to 90 mm. and the patient herself was conscious of gain.

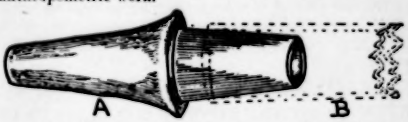
Treatment.—Under the free ingestion of water and moderate saline purgation, the pulse rate gradually dropped to 100 on August 5 (Fig. 3), since which time convalescence has been rapid.

Diagnosis in the case was at first perplexing. Certainly no infectious process was present to account for the symptoms, nor did there appear to be any source of autointoxication. The rapid heart action was too prolonged for paroxysmal tachycardia. The absence of exophthalmos, thyroid enlargement, tremor and general nervousness excluded Basedow's disease. The conclusion forced was that the patient's condition arose from taking "neuralgic capsules" obtained at a drug store. For several years past she has been subject to severe and prolonged attacks of facial neuralgia. It was while suffering from the last seizure that she sought relief at the hands of the druggist. He was willing to prescribe and furnished her with his stock remedy ("Neuralgic Capsules") for pain, in a neat little box, with printed label which read: "Take one, repeat in fifteen minutes, and then every two hours." She took six of the capsules, obtaining relief from the pain but developing the alarming symptoms for which medical aid was sought. Qualitative analysis by the state chemist, H. E. Barnard, shows that the capsules consist of acetanilid and caffein.

A SIMPLE, ASEPTIC MOUTH-PIECE FOR THE SPIROMETER.

THOMAS A. STOREY, M.D.
Associate Professor and Director Department of Physicial Instruction of the College of the City of New York; President of the Society of College Gymnasium Directors.
NEW YORK CITY.

So far as I am aware there is no spirometer tip on the market which can be cleaned easily. In view of the thousands of spirometer tests that are made each year in our various gymnasiums, this fact assumes a serious hygienic significance. A recognition of these facts justifies me, I believe, in presenting this device to the medical profession and particularly to those men engaged in anthropometric work.



Simple, aseptic mouthpiece for the spirometer.

This mouth-piece (A) is made of wood, bevelled on one end to fit easily between the lips. The other end is made to fit snugly in the bore of the rubber tubing (B) which leads to the spirometer. These may be made anywhere. The Narragansett Machine Company of Providence, R. I., has furnished me with tips at the rate of three dollars a thousand. Each mouth-piece is used but once. It is then thrown away. At one-third of a cent apiece this is not extravagant. With such tips in use the danger of spreading contagion from mouth to mouth in our anthropometric examinations would disappear.

TRAUBE'S SEMILUNAR SPACE IN EMPYEMA.

W. J. CALVERT, M.D.
COLUMBIA, MO.

The value of Traube's semilunar space in differential diagnosis is briefly discussed in modern texts. The statement usually found is that the tympany is replaced by dulness in pleurisy. Cabot[1] says that it "is of very little value in diagnosis. This tympanitic area is obliterated in many pleuritic effusions (not in all)." In this connection the following history is of value:

A boy with pneumonia continued to have fever and severe general symptoms after the time of the anticipated crisis. Pleurisy, possibly empyema, was considered.

Physical examination showed a normal tympanitic semilunar space. Next day, before tapping, the same condition was found. After withdrawing about one-half pint of pus, the space was dull as far as the lower boundary of the pleural sinus. This last examination was not more than fifteen minutes after the second examination when tympany was found. During this interval the patient had taken neither liquid or solid matter.

While being tapped the patient was fairly quiet; no local anesthetic was used. Within a few hours a portion of a rib was resected by Dr. Nifong and a thick fibrinous deposit was found on the parietal pleura. A large quantity of pus was removed.

Undoubtedly, the pleura on the thoracic wall had been glued by the deposit to the diaphragmatic pleura, thereby preventing the pus from filling the sinus. The manipulation of the patient during puncture broke the

1. Physical Diagnosis, Third Edition, p. 370.

weak union between the two pleural layers. The pus then filled the sinus and produced dulness.

Ferber, in 1875, mentions the possibility of the two layers sticking together.

A dull note or a dull tympanitic note extending in Traube's semilunar space to the lower limit of the pleural cavity is a valuable differential sign in pleural effusions or empyema. Little difficulty should be experienced in differentiating this note from dulness due to a full stomach or intestines, if the anatomic boundary of the pleural cavity is kept in mind. Occasionally, an enlarged lower lobe of the lung fills this space.

When a tympanitic space is found in a suspected pleural effusion, the possibility of the sticking together of the two pleural membranes should be kept in mind. These exceptional cases should not diminish the value of dulness as a differential sign in the general run of pleurisies.

EXCISION OF THE TONGUE FOR CARCINOMA.

C. E. RUTH, M.D.
Professor of Surgery Keokuk (Iowa) Medical College.

The great number of methods for excision of the tongue gives abundant testimony of the unsatisfactory state in which the various procedures are held by the profession and justifies me in presenting the following plan, which has proved perfectly satisfactory in my hands. It enables the total removal to be made without preliminary tracheotomy, without any annoyance whatever from hemorrhage, without danger, and assures a rapid and an easy convalescence while giving the maximum protection against recurrence.

In every case which can with certainty be diagnosed as carcinoma of the tongue accompanied by infiltration the lymph nodes in line with the lymph current are already involved. The removal of these glands is as important as the removal of the primary growth and should be done in all operable cases. The first step, therefore, should be the making of an incision under the lower jaw from behind one carotid bifurcation to a corresponding point on the opposite side. Through this incision the platysma and mylohyoid muscles are sectioned and all adipose tissue and lymph nodes removed from the symphysis menti and body of the jaw above and in front to the hyoid bone below and the carotid bifurcation behind. The carotid area should be traced downward from the bifurcation of each artery and any nodes discovered should also be removed.

The necessity for removal of the lymph nodes on both sides of the neck is at once apparent when we remember that the lymph vessels freely anantomose across the median line and are not confined to one side as the arteries and veins. If but one side of the tongue be involved and only one side be removed the lymph nodes must be removed from both sides.

The removal of the lymph nodes should also include excision of the submaxillary and probably also the sublingual glands. Careful search should be made for nodes in the digastric triangles and also directly under the symphysis menti. Both lingual and both facial arteries are easily secured through this incision and should be ligated before any work whatever is done in the mouth. Considerable annoyance may be avoided in this as in all operative procedures within the mouth by the administration of enough atropin to cause slight dryness of the fauces and thus obviate the accumulation of mucus in the throat, which is at times a very serious annoyance.

The wound in the neck having been closed, the throat is cleared of all mucus and a rubber tube as large as possible is passed through each nostril well down to but not beyond the top of the larynx. One of these tubes is to be used for inhalation of air and the other for the anesthetic, which should usually be chloroform. Moist gauze is packed lightly in the back part of the fauces so that there shall be no opportunity for blood to gain access to the larynx should there be more hemorrhage than was expected. The tongue can be grasped with volsella and removed by scissors without any difficulty and with no hemorrhage beyond a slight oozing, principally of venous blood. The administration of hyoscin, morphin and strychnin one and one-half hours before the operation will enable the work to be done with very little anesthetic. The floor of the mouth is best sutured with catgut. The patient can be easily fed by passing the food through a catheter introduced either through the nose or mouth for the first week or ten days. After that time he will usually swallow most or all of the food. Swallowing seems to be mainly prevented by the soreness of the sectioned muscles and the large tender stump, which is distributed by every movement in attempts at swallowing.

The resulting scar below the chin is insignificant and the floor of the mouth is perfectly smooth. One who has had no experience with excision of the tongue will be surprised to note how well these patients talk, for they can soon make themselves perfectly understood, although they talk very deliberately to increase the distinctness of articulation. The importance of preliminary ligation of all the main vessels which supply a part undergoing malignant degeneration or liable to the same remains to be determined. We have, however, reason to expect that the liability to recurrence will be greatly lessened in view of the favorable influence exerted on such growths by any plan which will limit their nutrition.

1370 Gilpin Street, Denver, Colo.

A Physician's Bravery Rewarded.—The chapter general of the Order of St. John of Jerusalem has awarded the medal of the order to Dr. Albert von Lecoq, of Berlin, in recognition of an act of humanity. The *Lancet* in giving an account of the incident states that Dr. von Lecoq was traveling in Chinese Turkestan last September and met Capt. J. D. Sherer, a British officer, at Kashgar. They agreed to travel back to India by the Karakoram route, and had crossed the Karakoram Pass when Captain Sherer was laid up with typhoid fever and pneumonia. Dr. von Lecoq, after caring for him for eleven days, decided to go forward to Panacuik to bring back assistance. To do this he was obliged to travel from dawn till sunset for nine consecutive days, crossing the dreadful Sassar and Murghi passes twice. During this time Dr. von Lecoq lived on flour balls dipped in melted grease, as he had left all the other stores with Captain Sherer, fearing that he would run short of supplies. This heroic man, says the *Lancet*, was himself in a debilitated condition from dysentery and hard living during two years' travel on scientific research in Turkestan. The *Lancet* quotes the following comment from the official account of this feat: "That Dr. von Lecoq, a mere road acquaintance of Captain Sherer, and a man of different nationality, should cross the Sassar and Murghi passes three times in fourteen days, the third time in a blinding snowstorm, the first named pass being 17,840 feet high and the summit consisting of some three miles of perpetual glacier, appears an act of self-sacrifice, humanity and devotion which is deserving of exceptional recognition."

New and Non-Official Remedies

THE FOLLOWING ARTICLES HAVE BEEN TENTATIVELY ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR INCLUSION IN THE PROPOSED ANNUAL, "NEW AND NON-OFFICIAL REMEDIES." THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT, BUT TO SOME EXTENT ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE FINAL ACCEPTANCE AND PUBLICATION IN BOOK FORM

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT SO FAR AS KNOWN IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

ADRENALIN INHALANT.

A neutral oily solution for application to mucous membranes, containing 2.5 per cent. of chloretone, adrenalin chloride (1:1000), 13 per cent. of alcohol, and aromatics.

Actions and Uses.—Astringent, antiseptic and mildly anesthetic.

Dosage.—See adrenalin.

Prepared by Parke, Davis & Co., Detroit, Mich.

ADRENALIN OINTMENT.

One part of adrenalin chloride in 1,000 parts of oleaginous ointment base.

Dosage.—See adrenalin.

Prepared by Parke, Davis & Co., Detroit, Mich.

ADRENALIN AND CHLORETONE OINTMENT.

Contains 5 per cent. of chloretone and 0.1 per cent. of adrenalin chloride, in an ointment base of hydrous wool fat and petrolatum. See adrenalin inhalant.

Dosage.—See adrenalin.

Prepared by Parke, Davis & Co., Detroit, Mich.

ADRENALIN TABLETS.

Each tablet contains 3/200 grain (1 mg.) adrenalin, as borate, yielding a 1:1000 solution when dissolved in 15 minims (1 Cc.) of water.

Dosage.—See adrenalin.

Prepared by Parke, Davis & Co., Detroit, Mich.

ADRENALIN AND COCAIN TABLETS.

Each hypodermic tablet contains cocain hydrochloride 1/6 grain (10 mg.) and adrenalin, as borate, 1/300 grain (0.2 mg.)

Actions and Uses.—Local anesthetic for dentistry and minor surgery.

Dosage.—See adrenalin.

Prepared by Parke, Davis & Co., Detroit, Mich.

ATOXYL.

Atoxyl, $C_6H_4(NH_2)(AsO.OH.ONa) + xH_2O = C_6H_5O_3NAsNa + xH_2O$, is sodium aminophenyl arsenate. Its composition corresponds to sodium-dihydrogen arsenate in which one hydroxyl of the arsenic acid is replaced by a molecule of phenylamine (aniline). It contains about 26 per cent. arsenic.

Atoxyl is a white powder having a faint salty taste, soluble in about 6 parts of water at ordinary temperature and more soluble in warm water. On standing the aqueous solution assumes a yellowish tint.

An acid solution of Atoxyl is not affected by hydrogen sulphide in the cold; when the solution is warmed the arsenic may be completely precipitated by hydrogen sulphide. If a solution of Atoxyl is treated with hydrochloric acid and potassium iodide, iodine is set free. The resulting liquid, whether freed of iodine or not, gives even in the cold a precipitate of arsenous sulphide when treated with hydrogen sulphide.

The per cent. of arsenic and of water contained in Atoxyl may be determined by the methods given, J. A. M. A., p. 1041.

Actions and Uses.—Atoxyl has the same action as arsenic in other forms, but is said to be less poisonous than other forms of arsenic. Investigation appears to show that the aniline takes no part in the poisonous action. It is claimed that the use of atoxyl is not followed by irritation, abscess formation, etc., which sometimes follow the use of other preparations of arsenic.

Atoxyl has been recommended for the conditions which are favorably influenced by arsenic, such as anemia, nervous affections and diseases of the skin. It is said to have been very successful as a remedy for trypanosomiasis, both of animals and of man.

Dosage.—Hypodermically from 0.02 to 0.04 Gm. (1/3 to 2/3 grain) may be given every other day. In sterilizing atoxyl solutions prolonged and excessive heating is to be avoided.

Manufactured by Vereinigte Chemische Werke Actiengesellschaft, Charlottenburg, Germany. (Victor Koechl & Co., New York.)
U. S. trademark No. 38879.

CODRENIN.

SOLUTION ADRENALIN AND COCAIN.

Contains cocain hydrochloride 1 per cent., adrenalin chloride 0.02 per cent., chloretone 0.5 per cent., dissolved in physiological salt solution.

Actions and Uses.—Local anesthetic and hemostatic in dentistry and surgery. The adrenalin delays the absorption of cocain and thus intensifies and prolongs its effects.

Dosage.—See adrenalin.

Prepared by Parke, Davis & Co., Detroit, Mich.

COLALIN.

Colalin consists essentially of a mixture of bile acids. It is said to be obtained from bile by a process similar to that used by Jolin to obtain hyocholalic acid. To preserve the pulverent condition, a little magnesium carbonate is added.

Colalin is a yellow powder of faint odor and persistent bitter taste. It melts at 103 degrees to 107 degrees C. It is slightly soluble in water and acid toward litmus.

Colalin should be readily soluble in alcohol and this solution should rotate polarised light to the right. It should dissolve almost entirely in a dilute solution of sodium carbonate with evolution of carbon dioxide and in a dilute solution of sodium hydroxide. The solution in sodium hydroxide should not be rendered turbid by the addition of barium hydroxide T.S. (absence of fatty acids). It should not contain more than a trace of sulphur (absence of taurin).

Actions and Uses.—It is claimed that Colalin represents the active principles of the bile and acts like it in the intestinal canal, assisting in the saponification and emulsification of fats, aiding the pancreatic juice, promoting peristalsis and acting as an antiseptic. Being absorbed and conveyed to the liver, it stimulates that organ to the production of bile.

Colalin is said to be useful in cholelithiasis as a preventive and as a remedy to obviate the recurrence of attacks of colic. It is claimed that it acts as an intestinal antiseptic, and by preventing intestinal autotoxemia is helpful in the treatment of various neuroses, such as epilepsy, neuralgia, etc., which are supposed to depend on the absorption of poisons from the intestinal canal. In addition, it is claimed that it is useful as a hepatic stimulant in affections in which the liver is insufficiently active.

Dosage.—0.015 to 0.030 Gm. (¼ to ½ grain) three to four times daily; for children from 0.008 to 0.015 Gm. (⅛ to ¼ grain).

Colalin is marketed in the form of powder and in tablets of ⅛, ¼ and ½ grain each.

Manufactured by Rufus Crowell & Co., Somerville, Mass. (Schleffelin & Co., New York). Not patented or trademarked.

(To be continued.)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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[For other information see second page following reading matter.]

SATURDAY, SEPTEMBER 21, 1907.

THE DISPENSARY PROBLEM.

The use and abuse of the dispensary has been the subject of a vast amount of discussion, and in some states various legislative measures have been enacted for the purpose of bettering conditions. These measures have met with more or less success, but at present conditions are far from ideal in the best of regulated communities. In a recent article Dr. S. S. Goldwater,[1] secretary of the Hospital Conference of the City of New York, offers some very pertinent suggestions. Dr. Goldwater points out that there is one evil, of no small importance in itself, which, if corrected, would tend to minimize the difficulties of meeting several of the other evils. This is the overcrowding to which many of the dispensaries are subjected. In an overcrowded dispensary it is utterly impossible for the patient to receive the time and attention which should be given him in order to secure even reasonably good results from the standpoint of either patient or physician.

Two measures are proposed to meet this evil: First, that the license granted to each dispensary shall limit the number of patients which the dispensary is allowed to treat, basing the limitation on the facilities which the dispensary possesses, and, second, that the area from which patients come who attend a given dispensary shall be limited to a certain district. These measures would probably be opposed by two classes of dispensaries: those which, for obvious reasons, desire to report a large number of patients treated and those which demand a large amount of clinical material for teaching purposes. The first should be made to conform to standards of quality rather than quantity of work, while the objection of those controlling the teaching dispensaries is fairly met by Dr. Goldwater's suggestion that their field may be broadened by utilizing other dispensaries for this purpose. As dispensaries are now located, the districts would necessarily overlap to some extent, and it might be found expedient to establish new dispensaries in certain districts; but even this would be more economical than to continue the present system of overcrowding.

In connection with this suggestion for the better cooperation of dispensaries through the scheme of districting, Dr. Goldwater urges an extension of the system of following certain patients to their homes in order to control, to a certain extent, the hygienic conditions under which they live. There are many conditions, such as tuberculosis, heart and kidney diseases, and many functional disorders, in which such a supervision is of paramount importance if any material benefit is to be obtained by the patient. The practicability of this plan is attested by the success attained by certain of the New York dispensaries, by the out-patient department of the Massachusetts General Hospital, and by many of the special tuberculosis clinics, which employ visiting nurses, physicians or social workers. The increase in efficiency in dispensaries which employ such methods is marked.

In certain communities, the laws aim to protect the dispensaries from imposition by individuals who can afford to pay a physician, by requiring that applicants for treatment shall demonstrate that they are suitable objects for dispensary charity before receiving treatment, and that all doubtful cases shall be investigated. The accomplishment of this purpose would be very much simplified if the suggestions made by Goldwater were carried out. A limited number of patients from a given district could be investigated with comparative ease, particularly if the dispensary possessed the machinery for home visiting. The community would suffer a very much slighter risk of being "pauperized" from such a system, carried out, as it should be, by trained workers, than it does at present in the indiscriminate or semi-regulated provision of dispensary treatment, while the deserving sick poor would be immensely benefited.

The solution of the dispensary problem may not be accomplished for many years, but it is evident to students of the question that progress is bound to come along the lines indicated by Dr. Goldwater. The effect on the health of a community in which such a scheme should be put into effect would be very material, while many of the ills to which the present dispensary system is subject would be wholly or partially eliminated.

1. Amer. Jour. Med. Sciences September, 1907, abstracted in this issue of The Journal, p. 1056.

CACTUS GRANDIFLORUS.

There is so much obscurity about this unofficial drug, and especially about the claims of the proprietary preparations of the drug, that Dr. Hatcher's summary, in this issue,[1] of the scientific and would-be scientific literature of the chemical and experimental phases of the subject, and the record of his own investigation of two of these products, will make interesting reading. They reveal the following facts:

1. The chemical analysis of *Cactus grandiflorus* has yielded such variable results in the hands of different investigators that we must conclude that the active principles—if such exist—have never been isolated. This is now practically acknowledged by the Abbott Alkaloidal Company, who formerly claimed that their "cactin" was a glucosid, but who now state that it is only a "concen-

1. Page 1021.

tration"—a loose and indefinite term designating a pharmaceutical and not a chemical product.

2. It is evident, therefore, that commercial products said to contain the pure, isolated, active principle can not be strictly true to their claims. In the absence of any known chemical tests for these hypothetical "active" substances, and so long as the proprietors see fit to keep the true nature of their products secret, it is impossible to know whether they contain all, several, one or none of the reputed active principles, and whether the "cactin" of one proprietor is the same as, or altogether different from, that of another proprietor.

3. The therapeutic claims for cactus as a cardiac tonic are difficult to control directly, although the disinterested negative evidence of Gordon Sharp appears more convincing than the more enthusiastic positive claims. The question can be settled much more definitely, however, by experiments on animals.

4. Experiments made with non-proprietary preparations have yielded results so variable and indefinite that it is probable that the investigators have been working with different principles perhaps obtained from different plants. At any rate, results so indefinite and variable would not justify the therapeutic use of any drug. From a practical standpoint these investigations would be of very limited value in the present connection, even were they positive, since we do not know what relation the proprietary articles, which are used almost exclusively, bear to the products obtained directly from the cactus.

5. Only two investigations appear to have been made directly with the commercial products: That of Myers on "cactina," and the present work of Hatcher on "cactina" and "cactin—Abbott." The conclusions of these two investigators are directly opposed, Hatcher's results being entirely negative, while Myers claims to have obtained more positive data. To these it may be remarked: The investigations of Myers appear to have been restricted to two experiments, and his results were such that a competent experimenter would have drawn from them but one conclusion, namely, that he would have to do some more work before rushing into print. Even were his results accepted, they would not justify either his pharmacologic or his therapeutic conclusions. Myers' experiments were made with "cactina" as supplied to him in 1891 by Mr. Sultan. Those of Hatcher were made with the pillets of "cactina" and "cactin" as *now* marketed respectively by the Sultan Drug Company and by the Abbott Alkaloidal Company. Dr. Hatcher is an experimenter of acknowledged standing; Dr. Myers does not appear to be so.

Those who have commercial interests at stake, and those who are not very familiar with animal experimentation, might object that the negative results on animals do not constitute a case against the therapeutic reports. The exploitation of the faulty experimental work of Myers by the commercial interests would, indeed, disprove the sincerity of such objection on their part. To those who honestly have this doubt it may be pointed out that there is no instance known of a drug which produces an acute therapeutic effect on man, and is at the same time inert when administered to animals, although it must be remembered that the effects are sometimes not the same. In the case of drugs which act on the circulation, however, the agreement has been found to be particularly striking, so that animals are even used for the quantitative estimation of such drugs as digitalis, strophanthus, suprarenal preparations, etc. The claim that a drug acts powerfully in cardiac disease in man, although it is found to produce no effect whatever in from a hundred to many thousand times the therapeutic dose when administered to healthy men, and to dogs, cats, rabbits, guinea-pigs and frogs would be as absurd as the proposition that $2 + 2 = 5$. If any one doubts this let him inject into a frog a thousand times the proportional therapeutic dose of digitalis, strychnin, alcohol, amyl nitrite, or any other drug which really does act on the circulation, and watch developments—the experiment will not consume much time.

Every one is free to draw his own conclusions from the facts presented by Dr. Hatcher. Our own conclusion is that those who lean on cactus in the treatment of cardiac diseases do not even lean on a broken reed, but on nothing more substantial than air.

CONCERTED ACTION IN TUBERCULOSIS CONTROL.

At its second meeting, held near the end of August, the Saranac Lake Society for the Control of Tuberculosis adopted its constitution and by-laws in which the objects of the association are formally declared. As this society represents a movement which is of interest particularly to all communities in which, for reasons of health, a number of consumptives, in addition to the ordinary quota of these patients that would normally occur, is to be found, it has seemed deserving of special notice. Such centers of tuberculous population have become more numerous in recent years in this country, and it is recognized that special precautions are needed in them. Besides, the regulations adopted at Saranac, where there has always been a commendable conservatism in dealing with consumptives, represent the form of control of tuberculosis which is likely to be of benefit wherever there is a noteworthy amount of the disease. The general objects of the society are declared to be the enforcement of sanitary laws, the education of the general public, dispensary treatment for needy patients, and the general dissemination of reliable information with regard to Saranac Lake and its vicinity both for the benefit of those already in the region and those who contemplate coming to it.

The greatest emphasis is laid on the education of the general public with regard to tuberculosis. It is recognized that the most important field for education is among those who, as boarding house keepers, are brought

in intimate contact with tuberculosis and in whom a knowledge of the necessary regulations to prevent its spread may prove especially fruitful in good results. It is realized, however, that much good will not be accomplished in this matter without the sanction of law, so it is proposed also to act coordinately with the board of health in bringing home to the people the necessity for enforcing such measures as deal with expectoration and disinfection, and by encouraging and assisting all hotels and boarding houses to enforce the sanitary laws. All cases of pulmonary tuberculosis must be reported and registered, and all rooms that have been occupied by patients suffering from pulmonary tuberculosis must be disinfected thoroughly. The society purposes to help the board of health in preventing expectoration on the streets and favoring the carrying of pocket sputum cups with the proper disposal of sputum. These regulations reassure the healthy inhabitants, save occasional visitors from fear of contamination, and prevent the spread of the disease.

The interests of the tuberculous patients are also promoted, however, and this feature of the new society promises to be its most helpful phase of work. It is proposed to maintain a free bureau of information with a competent manager, whose duties shall be: (a) to furnish reliable and impartial information concerning the conditions and cost of living in Saranac Lake and vicinity; (b) to explain conditions under which admission to the various semi-charitable institutions is to be gained; (c) to investigate needy cases and to provide temporary aid or nursing when necessary; (d) to cooperate with the board of trade and business interests in distributing suitable literature.

The scheme thus outlined represents a movement in the crusade against tuberculosis, the details of which should be familiar to all who are interested in the attempt to suppress the white plague of the north or at least to reduce its ravages. The organization which outlines it would seem to be worthy of emulation in every community which, like Saranac Lake, must assume the burden of more than its normal quota of consumptives, though every small town in the United States might well follow the example thus set and as a result be sure of distinctly lowering its mortality from the most serious factor in its death rate.

A POSTGRADUATE COURSE FOR COUNTY SOCIETIES.

In the department of Medical Economics in this week's issue[1] appears an outline of the first month's work of a course of postgraduate study for county societies, which is presented in the hope that it may prove of some service as a suggestion and a starting point for those societies which are in a position to take up systematic postgraduate study. The principal object of the county society is to be of the largest possible service to each member by adding as much as possible to his individual efficiency as a physician. Many societies are doing thoroughly valuable work; in many others the membership is not large enough to enable them to maintain a continuous scientific program from month to month. In such cases it may be necessary, in order to sustain the interest in the meetings and to make the societies of the greatest value to the members, to obtain assistance from without. It seems apparent that a systematic course of study, drawn up to meet the needs of the average society and conducted from a centrally located bureau from which can be sent out suggestions, advice, instructions, references to journals and textbooks, etc., will go far toward making the average county society more efficient and of more value to its members. The proposed course has been drawn up, not as an ironclad system to which it is necessary to conform, but as a suggestive outline to serve as a basis for county societies that desire to take up such work. It is probable that many modifications will be required. Perhaps no single county society can use the course exactly as it stands. It is presented in the hope that, from this as a beginning, there may be evolved a systematic, practical course of postgraduate study for county societies, which may later on be supplemented by personal instructions from competent teachers, as well as by laboratory demonstrations and instructions in practical methods, which will go to make up a satisfactory and complete course of postgraduate instruction at home.

1. Page 1043.

AN OBJECT LESSON IN THE ADVANTAGES OF ORGANIZATION.

According to the *British Medical Journal*, a medico-economic dispute of a somewhat singular character has recently taken place in England. The Halifax Board of Guardians, in November of last year, changed the terms of their advertisement calling for a resident medical officer for the Union Hospital, from one without restriction to sex and with a salary of $700 a year to a request for a "lady doctor" at a salary of $500 a year. The position was sought and obtained by a woman physician. The London School of Medicine for Women, however, took the matter up and communicated with the local division of the British Medical Association, which, on investigation, found that the guardians were under the impression that the services of a woman should be obtainable at a less rate than those of a man. A warning notice was published in the *British Medical Journal*, and the appointee resigned before entering on her duties, continuing, however, to act as locum tenens until a successor should be appointed. In June, 1907, another woman physician was appointed, but, on learning the circumstances, requested to be released from her appointment and from the bond signed by her which required her to forfeit $250 if she should not remain twelve months. The outcome was that a conference took place between the guardians and the representatives of the association, which resulted in an amicable settlement, by the acknowledgment of the principle that no distinction should be made on the ground of sex as regards the emoluments of medical posts. It is a matter for congratulation, also, that the subsequent treatment

of the women engaged in this controversy with the board of guardians appears to have been in every way satisfactory. As the *British Medical Journal* aptly says, "this should stand as a splendid object lesson to medical men who are concerned in disputes, and it would be difficult to find a better example of the advantages of organized and associated action."

TRADEMARKS AND PROPRIETARY MEDICINES.

A recent decision[1] of the United States Circuit Court in Rhode Island interestingly presents the United States law on the claims of proprietary medicines and the rights given by trademarks. In this case the complainant, while suing for an injunction against what it claimed to be an infringement of its trademark rights, took the position, as stated by the court, that it could make certain representations the truth of which it did not propose to prove, and that it was entitled to the protection of a court of equity in so doing. The court, on the other hand, laid down the rule that the proof should be required from that person within whose knowledge the fact rests, and "that there should be no such technical application of rules concerning presumptions or the burden of proof as to relieve a complainant from the obvious duty of satisfying the court that his goods are what they purport to be and what he represents them to be." The courts of the United States seem now to be fairly well committed to the principle that proprietary preparations must use only the truth in their advertisements if they are to have the protection of the law under their trademarks. This is what ought to have been expected—the federal government does not intend to give protection to frauds, not even against other frauds. The impression seems to have been otherwise, hence this suit. It is probable that only a minority, possibly a very small minority, of proprietors of secret remedies advertised for popular sale adhere strictly to the truth in their advertisements. Most of them, if not all, depend more or less on human credulity for their success, and whatever medicinal value their goods may possess is apt to be dearly paid for by the purchasers. It is a good thing to have it established legally that proprietors of nostrums have no special rights over those of other litigants—such as this decision says have been sometimes accorded them by courts of equity—and that trademarks will not protect them against others of the same class. But this alone is not enough. It might merely mean free trade in frauds; we ought to have a body of decisions fixing the civil and criminal responsibility of those who by such methods build up the habit of dangerous and too frequently fatal self-drugging. The homicide record of advertised secret nostrums will probably never be fully made up, but it would be appalling to the public could it be known.

SCIENTIFIC SUPERVISION OF COMMERCIAL CLAIMS.

Some time ago there was introduced in Germany, under the name of "Atoxyl," a new organic compound of arsenic. Although this preparation was advertised to a considerable extent, both in Europe and in this country, it did not come into special notice until the investigations of the Liverpool School of Tropical Medicine and those of Koch in Africa alleged favorable results from its use in trypanosomiasis. The prominence conferred on it, however, through its semi-endorsement by such high authorities, coupled with the claims made by others as to its value in various conditions in which arsenic is indicated, and especially with the fact that the manufacturers were making decidedly extravagant claims for it—it was asserted, for instance, that forty times more arsenic could be exhibited in the form of atoxyl than in any other way—led to the investigation of its composition by scientific men in three different countries, viz., in France by Fourneau, in Germany at the instance of Ehrlich by Bertheim, and in this country at the instance of the Council on Pharmacy and Chemistry by the Association's chemists, each working independently of the others. On another page will be found the result of the investigation in the United States, as made in the laboratory of the American Medical Association. We think it necessary to point out that this report from the chemical laboratory is not to be taken as condemnatory of atoxyl itself. It will doubtless seem strange that in one part of this issue a preparation should be published as approved, while in another part the same preparation should be subjected to what may be considered condemnatory strictures. In explanation of this seeming inconsistency, it must be remembered that though the manufacturers and their American agents have now modified their former extravagant statements concerning the preparation, many physicians who read them in the past may have been, and may remain, misled thereby. As will be noted in the report, under "Pharmacology," the same general conclusions were reached by the French and German investigators as have been arrived at by our chemists and by the subcommittee of the Council on Pharmacy and Chemistry. The medical profession of this country is surely to be congratulated on the fact that the assertions of manufacturers and others financially interested in the use of medicinal preparations are no longer to be taken without question or investigation as in the past. That such investigation is needed has surely been amply demonstrated by the findings in so many instances where it has been made. We are clearly at the dawn of a new era in scientific therapeutics.

1. Abstract in Medicolegal Department, this issue, page 1053.

Medical News

CALIFORNIA.

Diphtheria.—An epidemic of diphtheria is said to be raging at Floriston, Nevada County, where a number of cases have been found and two deaths have occurred.

Hospital Notes.—Work is soon to be commenced on the new hospital to be erected in the Claremont district of Berkeley at a cost of $100,000. Dr. George F. Reinhardt is to be in charge of the hospital when completed.——A change in the management of the Truckee Hospital has been made, Mr. W. Baumann retiring and Drs. J. Gordon Mackay and George W. Bryant assuming charge of the institution as managers.——Dr. Frank K. Ainsworth, head of the Southern Pacific hospital department, is looking over sites at Roseville, preparatory to building an emergency hospital for railroad employés at that place.

Resolutions of Thanks.—The San Francisco County Medical Society, at a recent meeting, adopted the following resolutions of thanks to those who aided in re-establishing its library, destroyed by the earthquake and fire last year:

WHEREAS, Through the great kindness and hearty cooperation of very many physicians throughout the United States, a large number of bound volumes and unbound journals have been sent to this Society for the purpose of re-establishing its library, and,

WHEREAS, In almost every instance there has been nothing to indicate from whom the various parcels of books and publications came, and,

WHEREAS, In view of this fact, it has been impossible for the librarian to express the thanks of the society to the donors, therefore be it

Resolved, That the San Francisco County Medical Society extends its sincere thanks to all those who have so willingly and so graciously contributed to the reconstruction of our library wherever and wherever they may be, and be it further

Resolved, That a copy of these resolutions be sent to THE JOURNAL of the American Medical Association and to the *California State Journal of Medicine*, with the request that these journals publish the same, and ask other medical journals to do so likewise.

DELAWARE.

Wilmington Water Inspection.—The city bacteriologist of Wilmington, in his annual report, announces that a typhoid fever epidemic threatens the city, because unfiltered and polluted water is used for drinking purposes. The report commends the effort of the health commissioner of Pennsylvania to keep the Brandywine River, from which the water supply of Wilmington is derived, free from pollution.

ILLINOIS.

State Board Will Act.—Dr. E. F. Baker, inspector of the State Board of Health, has visited Aurora and investigated the fifteen cases of smallpox now in quarantine. The State Board of Health is taking a firm stand in the controversy between the health authorities and citizens of Aurora regarding the necessity of vaccinating school children.

State Epileptic Institute.—At a meeting of the Madison County Medical Society, held in Granite City September 6, resolutions were adopted that the influence of the society be exerted in favor of the establishment of a state colony for the care and treatment of epileptics; and that a copy of the resolution be sent to the state authorities and a copy to the state medical society for similar action.

Free Antitoxin.—On September 10 the State Board of Health awarded the state contract for diphtheria antitoxin, to be furnished in sterilized syringes of clear flint glass, ready for use, with sterilized needles. The State Board of Health will supply antitoxin free to all people of Illinois who need it, through physicians of the state, who may obtain the antitoxin at the different stations of the board, of which about 300 are to be established. It will be necessary only for the physician who obtains the antitoxin to receipt for the same, and later to furnish the board a clinical report of the case. Antitoxin may be obtained at the antitoxin stations on or after October 10.

Personal.—Dr. Joseph De Silva, Rock Island, recently appointed a member of the board of trustees for the Illinois Institution for Feeble-Minded, Lincoln, has been elected president of the board.——Drs. Arold E. Kohler, Moline, and Carl O. Bernhardi, Rock Island, left for Mexico, September 2.——Dr. John W. Hairgrove, Jacksonville, is reported to be ill in Chicago.——Dr. J. H. Butler, Hartsburg, is ill at the Deaconess Hospital, Lincoln, with appendicitis.——Dr. Eugen Cohn, a member of the staff of the Illinois Eastern Hospital for the Insane, Hospital, has resigned to become assistant superintendent of the Illinois Southern Hospital for the Insane, Anna.——Dr. W. G. Bain, bacteriologist of the state board water survey department at the University of Illinois, Champaign, has accepted the directorship of the laboratories of the State Board of Health. This necessitates a change in his plans, announced in THE JOURNAL of September 14, of going to California to live.——Dr. Omar A. Kell, has been appointed chief of the medical staff of the Illinois Eastern Hospital for the Insane, Hospital, vice Dr. Samuel A. Graham, resigned.——Dr. Ernest W. Potthoff, Oak Park, dislocated his neck by a fall when hurrying to make a professional call, September 6, and is at the Oak Park Hospital.

Chicago.

Communicable Diseases.—During the week ended September 14, 86 cases of diphtheria, 71 of scarlet fever, 28 of typhoid fever and 24 of tuberculosis were reported. This is an increase of 33 cases of diphtheria and 22 of scarlet fever over the preceding week.

Correction Desired.—Dr. Channing W. Barrett requests the announcement made that the appearance of his name in the catalogue of the Jenner Medical College, in connection with the chair of gynecology, is an error, and that it was inserted without his knowledge or consent.

The New People's Hospital.—At a meeting, held September 8, of the Founders Club of the New People's Hospital Association, which is undertaking the erection of a new hospital at Archer Avenue and Twenty-second Street, several hundred dollars were subscribed by the members. About $35,000 is necessary to complete the building.

Coroner's Cases.—During August 367 deaths were reported to the coroner of Cook County, or 10 fewer than for August of last year. Of the deceased 31 committed suicide, 27 were killed by railroad accidents, 15 by street cars, and 13 were murdered. Tetanus caused 5 deaths; elevator, 5 deaths; illegal operations, 3 deaths; alcoholism, 14 deaths; burns and scalds, 13 deaths; drowning, 24 deaths, and electrocution, 2 deaths.

Hospital Workers Meet.—The ninth annual conference of the American Hospital Association, consisting of leading hospital workers, both physicians and laymen, in the United States and Canada, was held at the Palmer House, September 17 to 21, under the presidency of Dr. Renwick R. Ross of the Buffalo (N. Y.) General Hospital. Dr. George W. Webster, president of the Illinois State Board of Health, delivered the address of welcome. The annual banquet was held September 18 at the Palmer House.

Mortality of the Week—During the week ended September 14, 370 deaths were reported, four fewer that for the preceding week and 22 fewer than for the corresponding week of 1906. The annual death rate for the week was 14.10 per 1,000. Acute intestinal diseases caused 132 deaths; consumption, 48; violence (including suicide), 43; nephritis and cancer, each 39; pneumonia and heart disease, each 37; typhoid fever, 11; diphtheria, 8; scarlet fever, 7; whooping cough and influenza, each 2, and measles, 1.

Personal.—Dr. and Mrs. Daniel N. Eisendrath and Dr. Arthur D. Bevan have returned from Europe.——Dr. John Edwin Rhodes has returned from North Manitou Island; Dr. and Mrs. Julien E. Hequembourg have returned from Rye Beach, and Dr. and Mrs. John B. Murphy from Yellowstone Park.——Dr. and Mrs. Archibald Church are spending September in the Adirondacks.——Dr. and Mrs. Frederick Gillette Harris will remain abroad until January.——Dr. Marie A. Fellows suffered severe internal injuries in a collision between street cars, September 5.

INDIANA.

Do Not Wish Names Published.—At the August meeting of the Grant County Medical Society at Marion, new resolutions were passed, reiterating the declarations previously made by the society against the publication of physicians' names by the lay press.

To Investigate Tuberculosis Hospitals.—The members of the commission appointed by the governor to select a site and build a state hospital for tuberculosis patients, are taking a trip of investigation and inspection which will include the state and private institutions of Saranac, N. Y., Rutland, Vt., Tewksbury, Mass., Pembroke, N. H., and other localities.

Violation of License Law.—The State Board of Medical Examination and Registration has had filed with it affidavits against two practitioners of Bloomington, charged with furnishing prescriptions whereby whisky was obtained by individuals at drug stores.——A druggist of Emison is under trial at Vincennes, on the charge of selling beer over the counter without license.

Portrait of Dr. Fletcher.—Accompanying its account of the memorial exercises to the late Dr. W. B. Fletcher, of Indianapolis, on August 25, the *Indiana Medical Journal* issues as a supplement a beautiful steel engraving of Dr. Fletcher. It is not only a striking likeness, but an excellent work of art, reflecting the highest credit on all concerned in its reproduction and distribution.

Personal.—Dr. William W. Wright, Indianapolis, has been committed to the Central Hospital for the Insane.——Dr. Felix W. Hazelwood has been appointed a member of the New Albany board of health, vice Dr. Henry F. Bader.——Dr. Jesse H. Briggs, Churubusco, is reported to be convalescent after typhoid fever.——Dr. Fletcher D. Norton, Columbus, for 26 years superintendent of a Sunday school in that city, was presented with a silver loving cup by the school on his retirement.

Communicable Diseases.—Smallpox is reported to have been prevalent near Deer Creek since May last, and recently eight cases have been reported to Dr. William R. Quick, Delphi, sec-

retary of the Carroll County board of health. The schools in the neighborhood are not to be allowed to open until the disease is under control.——It is estimated that there are more than 150 cases of typhoid fever in Hammond. In St. Margaret's Hospital alone there are said to be 30 patients suffering from the disease.——During August 91 cases of typhoid fever were reported to the Indianapolis board of health, with 12 deaths.——Typhoid fever is reported to be prevailing to an alarming extent near Bridgeport, and at Hymera, a mining town near Clay City.——A severe epidemic of typhoid fever is reported at Burnettsville. An epidemic of typhoid fever is reported at New Market.

IOWA.

Personal.—A branch bacteriologic laboratory for the State Board of Health has been established in Burlington, with Dr. E. J. Wehman in charge.——Dr. Charles J. O'Keefe, Marble Rock, was seriously injured in a train wreck on the Rock Island System at Norris, September 6.——Dr. and Mrs. Carl Matthey and family, Davenport, have returned from Europe.——Dr. and Mrs. William E. Sanders, Alta, left for Europe, September 9.

Appeal to Legislature.—The Story County Medical Society, it is reported, has taken an appeal to the legislature in the matter of the college physician at the State Agricultural College, Ames, on the ground that this physician violates the principle of ethics in being a contract practitioner. The resolution states the disapproval of this method of contract labor, and recommends the appointment of a committee to confer with the board of trustees of the college and state legislature, if necessary, to effect such readjustment of the situation as will render it in harmony with the accepted principles of ethics of the profession.

KANSAS.

War on Typhoid.—The State Board of Health has sent out instructions to all county health officers, requiring the reports of physicians of all typhoid cases, together with the cause of the disease. In this way the board hopes to get reliable data whereby steps may be taken to remove the cause.

KENTUCKY.

New Staff for City Hospital.—On September 1 the following staff went on duty at the Louisville City Hospital: Drs. Oscar Bloch and Charles W. Hibbitt, surgery; Drs. Frank W. Fleischaker and R. Alexander Bate, medicine; Dr. Samuel E. Woody, diseases of children; Dr. Harry A. Davidson, obstetrics; Adolph O. Pfingst, ophthalmology; Dr. Oliver H. Kelsall, genitourinary diseases, and Dr. Argus D. Willmoth, rectal diseases.

Louisville's Health.—Dr. Meverell K. Allen, health officer, has submitted his annual report to the board of safety for the year ended August 31. During the year there was a total of 4,227 deaths and 3,867 births.——Based on an estimated population of 256,402, the total death rate per 1,000 was 16.4; the death rate among whites was 14.8 and among blacks 23.3. Tuberculosis proved the most fatal of all diseases, there being 490 deaths from this cause. Among the other causes of death are: Pneumonia, 374 deaths; heart disease, 312; typhoid fever, 168; apoplexy, 352; meningitis, 100; inanition, 216; cancer, 110; Bright's disease, 174, and enterocolitis, 106. A number of recommendations were made in the report, among them the following: Enforcement of the resolution providing for nonemployment of teachers affected with tuberculosis; the need for additional public bath houses; the installation of public hydrants for the free use of the public for drinking purposes and the elimination of public pumps; the importance of smoke consumers; the use of refrigerator cars on all railroads for conveyance of milk to the city; the employment of at least two sanitary inspectors clothed with police authority and the appointment of two women health inspectors. Dr. Allen also suggests that an appeal should be made to the next General Assembly to amend the city charter, permitting an enactment of the statutory law providing for the establishment of the city board of health, with independent powers and the authority to institute all proper rules and regulations for the enforcement of sanitary measures. This should carry with it a special taxation sufficient to create a fund of at least $25,000 per annum.

MARYLAND.

Personal.—Dr. G. Lane Taneyhill, Baltimore, has been elected surgeon-general of the Grand Army of the Republic.——Dr. Israel J. Woodward has been elected president of the health board of Havre de Grace.——Dr. John Luetscher, Baltimore, a member of the staff of the Johns Hopkins Hospital, is reported to be ill at that institution.

New Building for Johns Hopkins.—It has been found necessary to build a new pathologic department for the Johns Hopkins Medical School. The new structure will be erected in Wolfe Street and will be a two-story building, 80 by 30 feet. On the first floor will be constructed an amphitheater, while the second floor will be used for students in their work of investigation and research.

Typhoid Fever.—While there are a great many cases of typhoid fever in Baltimore, the assistant health commissioner states that the disease is not epidemic. The cases are well distributed over the city, and not confined to one district. He advises precautions as to drinking water, and believes that many of the cases are contracted out of town by people who are taking summer vacations.

Tuberculosis Exhibit.—The tuberculosis exhibit of the Association for the Prevention and Relief of Tuberculosis, which was on view at the Baltimore County Fair last week, was on exhibition this week at the Lawrence Settlement House, Baltimore, and later will be shown at the county fairs of Talbot and Frederick counties. On September 13 a special lecture was given in Lithuanian for the people of that race. The association now has 3,000 subscribers. On September 12 the secretary, H. Wirt Steele, delivered a lecture before the Kent County Teachers' Institute on "The Responsibility of the Community in Preventing Tuberculosis."

MASSACHUSETTS.

Medical Supply Table Revised.—The list of medical and surgical appliances required for factories and shops has been revised by the Boston board of health, on account of protest made by small shops against the expenditure required. The new list is as follows:

Two elastic tourniquets (minimum 24 inches); 2 rolls half-inch zinc ox. adhesive plaster; 2 rolls two-inch adhesive plaster; 4 dozen gauze bandages, assorted size, from one to four inches; 1 pound absorbent cotton; 1 yard sterilized gauze; 1 dozen emergency slings; 1 pair scissors, straight (2½-inch blade); 5 yards canton flannel (used with carron oil for burns); 500 tablets 1⅓ gr. corrosive sublimate and citric. Splint material—6 whitewood strips, 40 by 4 by 3-16; 2 pillows; 1 package of pins; 3 dozen safety pins; 8 ounces spts. ammon.; aromat. (rubber stopple); 1 gallon carron oil; 1 pint brandy; 1 basin.

MICHIGAN.

Tuberculosis Sanatorium Opened.—The first building of the Michigan State Sanatorium for the Treatment of Incipient Tuberculosis, Howell, is now open for the reception of patients and can accommodate 16. Plans for the main building are being perfected. When completed the main building will be 160 feet in length and will contain the offices, laboratories, headquarters for superintendents and attendants, beside the kitchen and dining room, and also two infirmary wings, each accommodating ten patients who will require special care. Seven patients entered the institution at the time of its opening.

Personal.—Dr. Charles J. Ennis, Sault Ste. Marie, has returned from Ireland.——Dr. Wellington H. Holtzman, Vernon, who was recently operated on for appendicitis, found a second operation necessary, but is now reported to be improving.——Dr. Albert P. Ohlmacher has resigned as director of the biologic laboratory of Frederick Stearns & Co., Detroit, and will devote himself to private laboratory work.——Dr. Peter J. Livingston, Caro, returned September 4 after several months abroad.——Dr. S. Rudolph Light, assistant physician of the Michigan Asylum for the Insane, Kalamazoo, has resigned.——Dr. Moses A. Fechheimer, formerly city physician of Detroit, has returned from Europe.

MISSOURI.

State Sanatoriums.—Work is progressing on the second villa of the Missouri State Sanatorium, Mount Vernon. The medical wing of the administration group is to be started soon. There are four patients at the sanatorium, and nearly enough formal applications have been received to fill the available space. The sanatorium can now accommodate 47 patients.

College Transfer.—The formal transfer of the Barnes Medical College and the Centenary Hospital of St. Louis to the University of Missouri, to take effect June 1, 1908, was completed September 6, with the signing of the final contracts between the president of the board of trustees of the college, the president of the hospital trustees and the committee for the university. The contracts call for the donation to the state institution of buildings and property valued at $300,000, together with their furnishings and equipment.

NEBRASKA.

Personal.—Dr. La Roy Crummer, Omaha, left for Vienna September 12.——Dr. Orlando P. Shoemaker, Clay Center, whose health has compelled his retirement from practice and who left for California September 2, was given a reception and dinner at the Hotel Harvard by the medical profession of Clay County, prior to his departure.

NEW YORK.

Wants County Laboratory.—At the meeting of the Hornell Medical and Surgical Association in Hornell, September 2, Drs. Burtis R. Wakeman and Leon M. Kysor were appointed a committee to secure the proposed county bacteriologic laboratory for Hornell.

Map System for Locating Diseases.—The health department of Buffalo has adopted a system of locating contagious diseases in the city by means of a system of maps and colored tacks. Blue tacks mark the location of diphtheria; yellow tacks, scarlet fever; black tacks, consumption; checkered tacks, typhoid fever; red, cerebrospinal meningitis, etc.

Faculty Changes.—The following changes have occurred in the faculty of the College of Medicine, Syracuse University: Frank P. Knowlton, M.D., assistant professor of physiology, has been made professor of that branch; Dr. Harold Dickenson, Sr., M.B., F.R.C.S., at present assistant in anatomy at the Wistar Institute of Anatomy, Philadelphia, has been made professor of anatomy and director of the anatomical laboratory, and Gustave M. Meyer, B.S., Sc.D., for four years assistant professor of physiologic chemistry at Columbia University, has been made professor of physiologic chemistry.

New York City.

More School Inspectors.—The health department has added 25 new members to its staff of inspectors of schools; ten for Brooklyn, three for the Bronx, one for Richmond, one for Queens and nine for Manhattan.

Typhoid Fever.—The health department has given out the typhoid figures for August, as compared with the same month of last year. They were, by boroughs as follows: Manhattan, 1906, 252 cases; in 1907, 326. Brooklyn, 1906, 259; in 1907, 167. Queens, 1906, 27 cases; in 1907, 32. Bronx, 1906, 24 cases; in 1907, 73; and Richmond, 1906, 6 cases; in 1907, 41.

Personal.—Dr. and Mrs. William T. Bull arrived from Europe August 27.——Dr. Raymond R. Westover, retiring house surgeon of Williamsburg Hospital, was given an informal banquet by the staff September 2, and was presented with a set of surgical instruments. Dr. Benjamin Vogt succeeds Dr. Westover as house surgeon.——Dr. Virgil P. Gibney returned from Europe September 10, and Dr. and Mrs. John W. Brannan September 13.

New Children's Hospital.—The Association for the Improvement of the Poor has raised $250,000 to be devoted to the erection of 14 three-story pavilions, each to accommodate 60 patients. The pavilions are to be used for the care of children suffering from tuberculosis. The city owns a five-mile tract on the ocean front at Rockaway Beach, and the strip to be used for the new hospital is part of this tract. In addition to the hospital the new buildings will include nurses' quarters, a nurses' training school, a pathological laboratory and a kindergarten.

OHIO.

Assistant Physicians to Meet.—The Association of Assistant Physicians of the State Hospitals of Ohio will hold its annual meeting at Toledo, October 2 and 3.

Personal.—Dr. A. E. Griffin, Columbus, is reported to be seriously ill at his home.——Dr. and Mrs. Edmund B. Mosher, Columbus, celebrated their golden wedding anniversary September 6.——Dr. McFarland, Blooming Grove, celebrated his eightieth birthday anniversary August 29.

Typhoid Epidemic.—A number of cases of typhoid fever have appeared at Cadiz, and one death has occurred.——During August, 27 cases of typhoid fever were reported in Youngstown. An analysis of the drinking water obtained from the different wells has already been commenced by the city chemist.

Hospital Notes.—Dr. Benjamin F. Lyle, Cincinnati, formerly superintendent of the City Hospital for Consumptives, Lick Run, will soon open a private institution for treatment of tuberculosis in Glenway Avenue and Rapid Run pike. The institution will accomodate 15 patients, who will be housed in tents and in two buildings on the site.——Dr. William S. Hoy, Wellston, has made a proposition to Athens Commercial Club for the establishment of a general hospital in that city.

PENNSYLVANIA.

Money for Charity.—William E. Pennypacker, West Chester, executor of the estate of the late Joseph Anderson, has given $12,000 to the Phoenixville Hospital. The gift was received by the trustees and a memorial to Mr. Anderson was ordered to be placed in the institution.

The State Meeting.—The annual meeting of the State Medical Society next week is looked for with great interest. The August issue of the *Pennsylvania Medical Journal* gave a well illustrated description of the city of Reading, where the meeting is to be held September 23 to 26. There is a list of the members, officers and house of delegates, news regarding the meeting, and the full program with abstracts.

Typhoid at Ridgway.—The epidemic of typhoid fever at Ridgway shows evidence of decline and fever cases are being reported each day. Dr. Dixon, state health commissioner, has issued a decree condemning the water supply of Ridgway as unfit for drinking purposes, and ordering the abandonment of all its supplies, with the requiremnt that new sources be obtained and that the water be filtered. Among the sources condemned were numerous springs used as private water supplies about the town, including the county spring.

Personal.—Dr. Markley C. Cameron of Pittsburg was seriously injured by being thrown from his automobile September 12.——Dr. Robert G. Boak, New Castle, fell while attempting to board a street car September 9, and sustained a severe sprain of the ankle.——Dr. L. G. Penton, resident physician at Chester Hospital, has resigned.——Dr. J. Edward Richmond has succeeded Dr. J. W. Wilson as surgeon of the Pittsburg division ceeded Dr. J. W. Wilson as surgeon of the Pittsburg division of the Panhandle System at Collier.——Dr. Joseph S. Miller, York, has been appointed county medical inspector, vice Dr. Isaac C. Gable, York, resigned.

Philadelphia.

Society Meeting Date Changed.—The annual meeting of the central branch of the County Medical Society, usually held on September 25, will be omitted on account of the meeting of the Medical Society of the State of Pennsylvania in Reading during that week.

Hospital Report.—The report of the Mount Sinai Hospital for August shows that 4,629 visits were made to the outpatient department. Of this number 1,180 of the visitors were new patients. In the emergency department 451 patients were treated, and 87 patients were received in the house.

Personal.—Drs. William C. Posey and William M. Sweet have returned from a prolonged stay in Europe.——Dr. Charles B. Penrose was seriously injured September 2, while hunting in the mountains of Montana in an encounter with a bear. His right arm was broken and other injuries were received. He is recovering in a hospital in Rochester, Minn.

Hospital to Make Improvements.—Ground was broken September 11 for the erection of a new dispensary building for the Polyclinic Hospital to cost $41,000. The building will be three stories high, constructed of brick with stone trimmings, and will contain an operating room, receiving room, sterilizing and etherizing rooms, and quarters for the resident physicians.

Alcohol in Treatment of Consumption.—According to the statistics in the report of the Henry Phipps Institute for the study and prevention of tuberculosis, alcohol neither prevents nor cures tuberculosis, neither does it strongly predispose persons to the disease, as is evidenced by the preponderance of non-alcoholic patients applying for treatment. The report states that it can not be demonstrated that the children of alcoholics are more prone to this disease than the children of non-alcoholics.

Hospital Makes Appeal.—The Polyclinic Hospital has issued a booklet entitled "Everyday Incidents," appealing for financial help for the present service. This appeal is made because the number of cases coming from the poorer sections of the city has increased out of proportion to the hospital's income. The floating debt is $37,942, and during the first six months of the year there was a deficit of $7,481. The hospital receives no regular contributions and more than 90 per cent. of its work is gratuitous.

Strict Watch for Defective Children.—With the reopening of the public schools September 10, the board of health has instituted a rigid daily medical inspection of the pupils. This examination is expected to swell the number of children found to be medically defective. Under the more restricted inspection

conducted last term the medical authorities found that more than one-fourth of the public school pupils were afflicted with physical or mental defects of a more or less serious nature. Out of 135,959 children examined, 36,920, or 27.7 per cent., were classified as suffering from some defect.

Health Report.—The total number of deaths reported for the week ended September 14 was 457. This is a decrease of 5 from the number reported last week, and a decrease of 43 from the number reported in the corresponding week of last year. The principal causes of death were: Typhoid fever, 8; scarlet fever, 2; pertussis, 7; diphtheria, 8; consumption, 48; cancer, 17; apoplexy, 25; heart disease, 35; acute respiratory disease, 30; enteritis, 67; cirrhosis of liver, 6; Bright's disease, 23; congenital debility, 17; suicide, 5; accidents, 17, and marasmus, 15. There were 146 cases of contagious disease reported, with 18 deaths, as compared with 150 cases and 17 deaths reported in the preceding week.

UTAH.

Councilor District Meeting.—The first quarterly meeting of the Third Councilor District Medical Society was held in Richfield, August 13 and 14, under the presidency of Dr. Frederick Clift, Provo. The constitution of the society was read and adopted, and acting president Clift was elected president and acting secretary-treasurer, Dr. W. J. Hasler, Lehi, was elected secretary and treasurer. The committee reported favorably on, and the society adopted, resolutions formulated by the American Medical Association regarding the $5 fee for life insurance examinations, and, furthermore, deprecated the use of traveling medical examiners, and advised the use of local medical examiners wherever practical. The society also adopted resolutions providing that health officers and quarantine physicians should receive fees equivalent to those obtained by physicians in family practice, and that in cities of the first and second class a salary should be paid not less than that paid to city attorneys in the respective localities.

WASHINGTON.

Raise in Rates.—The physicians of Spokane, it is reported, have advanced prices for their services. Hereafter the rate for calls is to be $4 instead of $2.50 and $3, and night calls are to be $6 instead of $5, as heretofore.

Warfare Against Rats.—The board of health of Seattle, at its meeting September 2, authorized Dr. Grant Calhoun, city health officer, to prepare an ordinance providing as far as possible for the removal of rats as a source of the spread of disease, especially the bubonic plague. Dr. Calhoun believes that warehouses where rats find their food, should be made ratproof and that buildings infested with rats, especially in the oriental section of the city, should also be protected from rats.

Personal.—Dr. Rose A. Bebb, Tacoma, has been made state bacteriologist and will open offices in Seattle.——Dr. George T. Boyd, Palouse, has recovered from his recent operation for appendicitis and has resumed practice.——Dr. J. Earl Else, formerly of Chicago, has located in Palouse and has been made surgeon to the Palouse General Hospital.——Dr. Hamilton Allan, Tacoma, was taken seriously ill with asthma at Montreal and was forced to abandon his trip abroad. He is now in the middle states and is reported to be improving.

GENERAL.

July Mortality in Havana.—The local board of health of Havana reports the total mortality of that municipal district for July to have been 676, equivalent to an annual mortality of 27.04 per 1,000. During the month no acute quarantinable disease was reported. Chief among death causes were decreases of the circulatory system, 126; tuberculosis, 109; enteritis, 108; bronchitis and pneumonia, 46; meningitis, 37; congenital debility, 24; cancer, 19; influenza, 17; cerebral congestion and hemorrhage, 16; accidents, 14; nephritis, 11; cirrhosis of the liver, 8; measles, 8, and typhoid fever, 7.

Anatomist Wanted for Army Medical Museum.—The United States Civil Service Commission announces an examination, on October 23-24, at the usual places throughout the United States, for an anatomist (male), at $1,600 per annum, in the Army Medical Museum, office of the surgeon general, and other similar vacancies as they may occur. The examination will be thus graded: Human anatomy, 40 points; anatomic drawing (pen-and-ink drawing from photolithograph furnished), 20; gross pathology (of tissues), 15; construction, care and use of microscope, 10; training and experience (rated on application), 15; total, 100. Age limit, 20 years or over. The man appointed to this position should be, preferably, but not necessarily, a graduate in medicine. Applicants may apply to the United States Civil Service Commission, Washington, D. C., for application form 1312. As examination papers are shipped direct to the places of examination, it is necessary that applications be received in ample time to arrange for the examination desired at the place indicated by the applicant.

Yellow Fever.—Word from Governor Magoon September 13 reported three new cases at Cienfuegos, Cuba, and four on the previous day. Six patients were Spaniards, and one was an American soldier. The latter, it is believed, contracted the disease in town, therefore the case does not indicate infection of the camp. Nevertheless the barracks have been fumigated and all precautions taken. The discovery of these cases is attributed to increased efficiency of medical patrol. One new case is also reported at Alacranes and one at Nuevapaz, both in Spaniards. By decree of the governor, army surgeons are made members of the sanitary board.——The health authorities of Havana have ordered a quarantine against all steamers from Mexican ports on account of the presence of a case of yellow fever in Vera Cruz, Mexico.——Dr. P. J. Shaver, assistant to the state health officer of Texas, who was detailed to make an investigation into the origin of three cases of yellow fever found on the steamer from Vera Cruz, Mexico, quarantined at Sabine Pass, reports he is unable to trace the origin of these cases.

The Plague Situation in San Francisco.—On September 13 Passed Assistant Surgeon Rupert Blue, U. S. Public Health and Marine-Hospital Service, assumed charge of the situation in San Francisco, working in conjunction with the city authorities and utilizing their special organization, which consists of 12 medical inspectors, who are experts in bubonic plague, and 36 sanitary inspectors, who direct a large force of rat-catchers and laborers. After a conference between Dr. Blue and the city and state officials, the following statement was issued to the people of San Francisco:

> Rumors of an alarming nature having reached the Board of Health in regard to bubonic plague, the president of the board, by its authority, hereby declares that there exists nothing in San Francisco that need cause any alarm, much less the quarantining of the city, and that there is at present no intention to make such quarantine. So far, there have been detected but 24 verified cases of the disease since May 27 last. Every precaution is being taken by the federal authorities to cooperate with the state and city boards of health to stamp out such of the disease as is here. It is well to bear in mind that the bubonic plague seldom becomes an epidemic, except in the tropics.
>
> W. OPHÜLS,
> President San Francisco Board of Health.
>
> We concur:
> Rupert Blue, Passed Asst. Surgeon, U. S. Public Health and Marine Hospital Service.
> Edward R. Taylor, Mayor of San Francisco.
> Martin Regensburger, President State Board of Health.

The Year's Yellow Fever in Havana.—The following is a statement of yellow fever in Havana and suburbs from Jan. 1, 1906, to Sept. 4, 1907. The great improvement in the number of admissions and deaths noted soon after the American occupation, October, 1906, reflects great credit on Major Jefferson R. Kean, surgeon, United States Army, and sanitary adviser to the provisional governor of Cuba:

Month.	Cases.	Deaths.
January, 1906	5	2
February, 1906	1	0
June, 1906	4	1
August, 1906	4	1
September, 1906	7	2
Total	21	6
SINCE OCT. 1, 1906.		
October, 1906	24	3
November, 1906	23	3
December, 1906	3	0
January, 1907	0	0
February, 1907	0	0
March, 1907	0	0
April, 1907	0	0
May, 1907	0	0
June, 1907	0	0
July, 1907	0	0
August, 1907	1	0
Total	51	6
Total, January to September, 1906	21	6
Total October, 1906, to August, 1907	51	6
Grand total since Jan. 1, 1906	72	12

CANADA.

Personal.—Dr. Gilday of the Toronto General Hospital has gone abroad for two years.——Dr. O. M. Jones, Victoria, B. C., is returning home after several months in the old country.——Sir Charles Tupper, M.D., Bart., the founder of the Canadian Medical Association, came from England to attend the fortieth annual meeting.——Sir James Grant, M.D., Ottawa, claims to

have attended thirty-seven of the forty annual meetings of the Canadian Medical Association. This is a record.

Canadian Medical Association Meets.—The fortieth annual meeting of the Canadian Medical Association was held in Montreal, Sept. 11-13, 1907, under the presidency of Dr. Alexander McPhedran, Toronto. Two items made of it an extremely interesting and important meeting, namely, the inauguration of a section of laboratory workers and the adoption of a new constitution and by-laws. For several years the general secretary in his annual reports has been calling attention to the need of being established on a better business basis, in order, among other things, to facilitate better work in the scientific associations. At Halifax two years ago a special committee was organized and one year ago made a report, which was not seriously discussed. This year the report was perfected and after careful revision was adopted. Ideas were borrowed from both the American Medical Association and the British Medical Association. There is to be an executive council corresponding to the House of Delegates of the former, with a finance committee modeled somewhat after the Board of Trustees. The provincial societies in Canada are brought into line and made the connecting link between the Canadian Medical Association and the county and city societies. The establishment of a medical journal, to be the official organ of the association, is an essential part of the scheme. A special committee was appointed in this connection, which will go into the question of finances and report at the next annual meeting. An address in medicine was delivered by Dr. H. D. Rolleston, London, Eng., on the suprarenal bodies; an address in pathology was delivered by Professor Adami, Montreal, which dealt largely with the embryology of certain forms of monsters, and an address in surgery by Dr. Ingersoll Olmsted, Hamilton, Ont. The meeting reported favorably on having cerebrospinal meningitis placed with infectious diseases under the control of boards of health. It was decided to meet at Ottawa in 1908 with Dr. Frederick Montizambert, director general of public health, as president; Dr. George Elliott, Toronto, general secretary, and Dr. H. Beaumont Small, Ottawa, treasurer.

FOREIGN.

Physicians Refuse to Serve at Duels.—The medical association of the district of Palermo, in Italy, have taken the initiative in refusing their services to duelists. They think that the inability to obtain a physician may help to deter would-be duelists, and arouse an agitation against dueling in general.

Committee for Cancer Research in Russia.—The German cancer research committee has succeeded in arousing the Russians to organize a similar band of workers in the line of cancer research in Russia. The director of the Institute for Experimental Medicine and editor of *Russkii Vratch*, Prof. V. V. Podwyssotzky, has been appointed chairman of the Russian committee, which includes Sirotinin and Trojanow.

Addition to Rotunda Hospital.—A new wing of the Rotunda Hospital, Dublin, was opened August 27. This cost $40,000 and comprises six wards, rooms for nurses and women students, and a disinfecting chamber. Lady Aberdeen, who officiated at the formal opening, said that the new wing is the result of the wish expressed by Queen Alexandra that poor women might be enabled to stay in the hospital longer than the usual eight days.

Boric Acid as a Preservative.—The Berlin authorities recently asked the advice of experts as to the harmfulness of boric acid as a preservative in foods. The opinion was expressed that the use of preparations of boric acid as a preservative for food should be unhesitatingly condemned, both boric acid and borax, even in small amounts, being injurious to health, while they enable the public to be deceived into buying stale and spoiled goods for fresh and sound articles.

Souvenir for Lucas-Championnière.—The friends and pupils of the Paris surgeon, Lucas-Championnière, propose to present him with a souvenir plaque on the occasion of his nomination to be commander of the *Légion d'honneur*. Lord Lister is chairman of the committee in charge, and M. G. Steinheil, éditeur, 2 rue Casimir-Delavigne, Paris, has been appointed the treasurer. A subscription of $5 entitles the subscriber to a bronze copy of the plaque, which is to be designed by Paul Richer.

Dismissal of Medical Officer for Voting the Socialist Ticket.—The physician connected officially with the Wiesbaden post-office cast his vote for the social-democratic candidate for member of parliament at the recent election, and has been dismissed from his position on this account. The local medical society protested against this action of the postal authorities, and the *Leipziger Verband* has taken the matter up, so that no physician can be found willing to accept the place left vacant by his removal.

Cancer Literature.—Dr. Anton Sticker of Berlin has been making a special compilation of cancer literature during the last five years, and states that 3,395 special works have appeared on this subject. Of this number, 1,960 were in German, 607 were in English, 549 in French, 113 in Italian, 70 in the Slavic tongues and 37 in the Scandinavian, with 7 in Portuguese, 3 in Japanese and 2 in Greek. Even this list is not complete, and still the cancer question is as much of a problem as ever.

Second International Congress for Industrial Accidents.—A congress is to be held at Rome in the autumn of 1908 to coincide with the eighth international congress for insurance of work people. Further particulars can be obtained from Dr. Luigi Bernacchi, via Paolo Sarpi, No. 7, Milan, secretary of the congress. Dr. M. De Cristoforis is chairman of a committee appointed at the last congress to collect works bearing on industrial accidents, the regulations in various countries and the means of defence against industrial accidents, with a library, museum and endowment for prizes, in connection with the newly created clinic for industrial accidents at Milan, in charge of De Cristoforis and Bernacchi. The former is senator from the Milan district.

Tuberculosis in Ireland.—The annual report of the local government board for Ireland for the year ended March 31, 1907, states that the death rate from tuberculosis is far higher in Ireland than in either England or Scotland. The board considers that many difficulties in dealing with the tuberculosis problem would be overcome if the county councils were given power to establish and maintain suitable institutions for the treatment of consumptives. The following plan is suggested: 1, Segregation in hospitals of advanced cases; 2, sanatoriums for incipient cases; 3, tuberculosis dispensaries in large centers of population; 4, local committees appointed by sanitary authorities. In addition the board follows the example of the Scotch board and recommends compulsory notification of pulmonary tuberculosis, safeguards being provided to ensure that no unnecessary restraint is placed on the liberty of tuberculous patients.

LONDON LETTER.

(From Our Regular Correspondent.)

LONDON, Sept. 7, 1907.

Irish Vital Statistics.

The forty-third annual report of the Registrar-General for Ireland, which has just been issued, states that the birth rate was 23.6 per 1,000, 0.04 above the average for the preceding decade; the death rate was 17 per 1,000, which is 0.9 under the rate for the preceding decade. The natural increase of population or excess of births over deaths was 29,109, but the loss by emigration was 35,344, making a decrease of 6,235 in the population during the year, against which there is a set-off in immigration, of which there is no official record. The estimated population in the middle of the year was 4,388,006, while in 1896, it was 4,542,061, showing a decrease in the eleven years of 154,055. Ireland has always furnished remarkable examples of longevity. Among the deaths registered in the year were 606 of persons stated to be 95 years of age and over—312 males and 294 females; of these, 133 (57 males and 76 females) were reported to be aged 100 years or more. In the absence of public records for remote periods, verification of the age of very old persons is not possible; but inquiries made as regards persons returned during some recent years as centenarians showed that almost in every instance, so far as the registrars could ascertain, the age was correctly stated. Prominent among the causes of death in Ireland is tuberculosis. The registrar-general again deplores the fact that while the death rate for tuberculosis has fallen in England since 1864, the rate still remains very high in Ireland. However, it is a matter for some congratulation that the high death rate of 2.9 per 1,000 of the year 1904 has been followed by a decline to 2.7 in the years 1905 and 1906.

A Centenarian Physician.

Sir Henry Alfred Pitman, who has just entered on his hundredth year, claims the distinction of being the oldest physician in the United Kingdom. He took the degree of B.A. at Cambridge in 1831 and the degree of M.D. 67 years ago. For the last half century he has been on the staff of St. George's Hospital, of which he is now senior consulting physician. From 1858 to 1889 he was registrar of the Royal College of Physicians. He enjoys good health and is very active considering his great age.

Notification of Birth's Bill.

A new law in England and Wales requires births to be registered within forty-eight hours, instead of within six weeks. The birth of a stillborn child must also be reported. This duty is thrown first on the father, and failing him, on the midwife or medical man who has attended the mother. A penalty is to be imposed for failure. The bill is a good one, and where effectively put in force should go far toward saving life and lowering infantile mortality. This act is what is termed an adoptive one, that is to say, it has not been made compulsory on all county councils to adopt it.

National Health Authority for England and Wales.

At a recent meeting of representative sanitary authorities of England and Wales, in Newcastle-on-Tyne, a resolution was passed expressing the opinion that a permanent union of the sanitary authorities of England and Wales should be established as a supreme national health authority, with the object of safeguarding and promoting the interests of the people at large against tuberculosis in men and animals, meat and milk supplies, infant mortality, water supplies, vaccination, physical degeneration, the drink problem, the disposal of sewage, the pollution of rivers, the prevention of disease through shell fish in polluted waters, the prevention of syphilis as a national evil, the housing question, and the assistance necessary in carrying out other sanitary reforms, and questions relating to the public health. It is proposed to hold a conference to discuss the matter in London.

The Planning of Suburbs.

The obsolete land system of Great Britain is one of the causes of the unsatisfactory condition of that pressing problem, the housing of the people. A most important deputation from the Association of Municipal Corporations waited on the prime minister and the president of the local government board on the question of the planning of suburbs. Councilor Nettlefold of Birmingham pointed out that there is at present waste due to the absence of cooperation between land owners and local authorities. The system forces local authorities to harass land owners on details without giving them comprehensive control. It forces them to hamper honest builders without enabling them to stop jerry-building, with the result that the poorer classes have to pay "through the nose" in rent and rates for what they do not want and would be better without. During the last 30 years enormous sums have been spent out of the taxes in widening streets, and the greater part of this was for compensation for the demolition of buildings which never ought to have been put up. Mr. Fox, town clerk of Leeds, said that it has been estimated that if sufficient foresight had been used a sum of $70,000,000 would have been saved to the country in the last 30 years. The general proposition was that municipalities should be empowered to buy land, not merely for statutory municipal purposes, but sufficient to develop the estate on sound lines of town planning. The premier made a sympathetic reply. He condemned the present system which involved pulling down slums with one hand and allowing them to grow up with the other. Very properly rapid means of communication into better air and pleasanter scenes have been introduced for those who work in the great towns, but the very provision of that rapid means of communication creates in the country the evils it was sought to remove. The whole thing should be controlled by the municipal authorities. Mr. John Burns, president of the local government board, promised to introduce a bill in harmony with the views of the deputation.

Inebriates in Great Britain.

The report of the inspector under the new inebriates' act of Great Britain for 1906, issued recently, shows that 404 persons sentenced to detention under this act, were duly admitted to reformatories during the year ended Dec. 31, 1906, 110 men and 294 women, a decrease of about 40 as compared with the previous year, mainly due to the smaller number of women. The mental characteristics of two-thirds of the number committed is dealt with, showing that these were of unsound mind, and demonstrating the fact that few persons committed were sufficiently sound in mind or body to warrant hope of reformation. Many were found to be hopelessly diseased and irreformable, really fit for nothing but permanent detention for their own good and for that of the community. The inspector says that so far as reformatories themselves are concerned, there is ample reason for an expression of content. Reformatories generally, so far as the unsatisfactory nature of their inmates will allow, have run smoothly, and have given evidence of ability to fulfill their object.

Railway Carriages for Invalids.

The London & North Western Railway Company has recently put into service a new type of carriage for the conveyance of invalids. The width of the vehicle has been utilized to the fullest extent; the main compartment is both light and spacious, and the provision of a full-size bed lengthwise is an improvement over the earlier types of invalid carriages. The invalid compartment is nearly the center of the car and is over eighteen feet long. It is fitted with an ornamental gold-lacquered brass bedstead with a box mattress on top. The lighting is by electricity, the heat is steam and there is a good ventilation system.

VIENNA LETTER.

(From Our Regular Correspondent.)

VIENNA, Sept. 7, 1907.

Visiting French Physicians.

During the months of August and September a number of French physicians are visiting various places in Austria, notably Carlsbad, Marienbad and the clinics of Vienna. The visitors will include in their itinerary all the Austrian universities, seven in number, and will conclude the tour with a visit to the Tyrol.

Milk Supply of Vienna.

The Vienna board of health has made the following regulations for the control of the milk supply of the city: All milk coming from without the city limits must be placed in sealed vessels at the place of origin and the seals must be unbroken. The dairy from which such milk comes must conform to certain rules laid down by the board of health or their product can not be sold in Vienna. The milk from these out-of-town dairies will be examined at irregular intervals and supervision thus maintained. The milk from dairies within the city will be examined at least twice weekly and the inspection of the cattle of such dairies by the official veterinarians has been made obligatory. No milk may be sold in open vessels.

Therapeutics

[It is the purpose of this department to outline an up-to-date management of disease, to suggest scientific treatment for diseased conditions, and to present prescriptions that are simple, useful and palatable. Prescriptions are written in both the metric and apothecaries' systems, but the amounts of the ingredients are NOT exact translations of one system into the other, but quantities convenient for pharmacist and physician. It should be understood that solids are weighed in grams or fractions of grams, while liquids are measured in cubic centimeters; that a teaspoon holds five cubic centimeters, i. e., more than a fluid dram, hence a 100 cubic centimeter preparation will contain twenty doses.]

Asthma.

Dr. E. L. Smith, Chicago (*Medical Record*, June 29, 1907), sums up the treatment of this condition based on his observations of 300 cases. Of course, all etiologic factors that can be removed must receive surgical attention, as nasal polypi and hypertrophies. When asthma is caused by certain dusts or odors these should be avoided, if possible. Disturbances of the throat and larynx should be treated, and bronchitis should be stopped by treatment or change of climate. Arteriosclerosis should be considered and treated. Gout, kidney lesions, or any toxemia should be prevented, if possible, before actual treatment is instituted. The favorable action of iodids or iodin, Smith believes to be due to their ability to reduce the swelling of the bronchial glands, and hence, to relieve pressure. He also thinks that the specific action of iodids on the nasal tissues has something to do with the benefit they cause in asthma. The action of nitrites as general vasodilators is due to the equalizing of the circulation in the entire vascular system. "The pressure is, therefore, relieved in the asthmatogenic areas."

Adrenalin can do good, he states, only as a local vasoconstrictor, which is another method of arriving at the same relief of local congestions. Unless there is cardiac asthma due to

cardiac depression adrenalin or suprarenalin given hypodermatically, or in any manner except by local sprays or applications, can do no possible good in asthma. Atropin in large doses to relieve the irritabilty of the terminal endings of the pneumogastric nerves will probably generally be of temporary benefit in asthma. Whether this atropin is administered as atropin, as hyoscyamin, or even hyoscin, or as stramonium or belladonna, does not seem to make much difference. Theoretically, if atropin is needed and will do good, it is best administered hypodermatically.

Smith believes that the good results obtained by inhaling the fumes of burning niter paper, or cigarettes and stramonium and niter, "is due to the vasoconstriction that the irritation of the fumes causes in the asthmatogenic areas."

Gargles.

R.	c.c.		
Aquæ hydrogenii dioxidi	200	or	f℥vi

Sig.: Dilute with three parts of water and use as a gargle every three hours.

R.	gm. or c.c.		
Potassii chloratis	10	or	3iiss
Aquæ	200		f℥vi

M. et Sig.: Use as a gargle every three hours.

R.	gm. or c.c.		
Acidi borici	6	or	3iss
Aquæ	200		f℥vi

M. et Sig.: Use as a gargle every three hours.

R.	gm. or c.c.		
Acidi tannici	3		3i
Glycerini	10	or	f℥iiss
Aquæ	ad 200		f℥vi

M. et Sig.: Use as a gargle every three hours.

The Therapeutic Uses of Ergot.

The preparation selected should be a pure fluid extract, and in emergencies should be given intramuscularly, and best into the deltoid. It may be used in any condition of cardiac and circulatory failure, whether it be in typhoid fever, pneumonia meningitis, operative shock, or shock from injury. When the condition of collapse is serious, two, three, or even four hypodermic syringefuls may be injected at one time; later at six-hour intervals. In chronic cardiac weakness ergot is not indicated, but when there is intense pulmonary congestion and edema from failure of the right side of the heart, venesection followed by ergot hypodermatically has saved life. In severe hemorrhages saline transfusion will be more efficient combined with the administration of ergot than without it.

In acute inflammations of the brain and spinal cord ergot, intramuscularly, is of the greatest value. This combined with local applications of ice to the head and back is a most efficient treatment of cerebrospinal meningitis. It also intensifies the action of the morphin that must be given for pain, unless this be due to the passage of a calculus. In sleeplessness with low blood tension ergot is of value, and without a hypnotic, even when administered by the mouth, may cause sleep. Congestive headaches are often relieved by ergot. Delirium tremens and the meningitis of pneumonia are benefited by ergot given intramuscularly.

Hysterical pains and referred nerve pains are often benefited by ergot as much as by bromids, and this without giving a depressant drug.

In paralysis of the intestines after abdominal operations, a condition feared by all surgeons, injections of ergot are a distinct aid in promoting peristalsis. This treatment may be combined with atropin or eserin, given hypodermatically, as the surgeon deems advisable.

In certain forms of asthma in which there is marked congestion of the bronchial mucous membrane injections of ergot will do good. The value of causing contraction of the blood vessels in asthma is often demonstrable by suprarenal solution sprayed in the nostrils or throat. The action of suprarenal solution, however, is often so short-lived that prolongation of the contraction of the vessels by ergot is of value. When the asthma is made better by vasodilators, as nitrites, ergot would not be indicated.

The vasomotor dilatations, hot flashes, profuse sweatings and nervous irritability in Graves' disease is often made better by the internal administration of ergot. Of course, it should not be given just before or during the menstrual period.

Ergot is always of value in the treatment of morphin or opium habit, especially when the drug is gradually reduced. As above stated, in all ordinary conditions, the action of any one dose of morphin or opium is intensified by the coincident administration of ergot.

In a number of instances ergot has also been of marked benefit in diabetic insipidus, and in the albuminuria of adolescence.

The value of ergot as a uterine contractor in dilated conditions of the uterus associated with hemorrhage is too well recognized to need any discussion.

When the ergot is administered intramuscularly perfect cleanliness must be observed. The parts should be thoroughly scrubbed with soap and water, then cleansed with alcohol, and the injection made with clean hands, clean needle, clean syringe, and an aseptic preparation of ergot. If swelling, pain and heat occur in the region of the injection, a wet dressing, consisting of one part of alcohol to three parts of water, covered with rubber tissue or oil silk, and bound gently to the part, will soon reduce the slight inflammation. With these precautions abscesses will rarely, if ever, occur from the injection of ergot.

Diarrhea in Adults.

R.	gm.		
Hydrargyri chloridi mitis	30	or	gr. v
Sodii bicarbonatis	1		gr. xv

Fac chartulam 1.

M. Sig.: Take at bedtime.

Follow with:

R.			
Pulverem effervescentem compositum	1		

Sig.: Take in the morning on arising, and follow with:

R.	gm.		
Bismuthi subnitratis	10	or	3iiss
Phenylis salicylatis	3		gr. xlv

M. et fac chartulas 10. Sig.: A powder every two hours.

When the diarrhea is checked use the following tonic for a few days:

R.	gm. or c.c.		
Strychninæ sulphatis	.02	or	gr. 1/3
Ferri reducti	1		gr. xv

M. et fac capsulas 10. Sig.: A capsule, three times a day, after meals. Or:

R.	c.c.		
Tincturæ ferri chloridi	10		f℥iiss
Acidi phosphorici diluti	10	or	f℥iiss
Elixiris aromatici	50		f℥iss
Aquæ	ad 100		f℥iii

M. et sig: A teaspoonful in water, three times a day, after meals.

Lotion for Acne.

R.	gm. or c.c.		
Potassii sulphuratis	5		3i
Sulphuris præcipitati	5	or	3i
Zinci sulphatis	5		3i
Aquæ	ad 150		f℥iv

M. et sig.: Apply externally night and morning.

Lotion for Dandruff.

R.	gm. or c.c.		
Chlorali hydrati	10		3iiss
Glycerini	20	or	f℥v
Aquæ	ad 200		f℥vi

M. et sig: Apply freely to scalp.

Ointment for Dandruff.

R.	gm. or c.c.		
Resorcinolis	5		3i
Sulphuris præcipitati	10	or	3ii
Petrolati	ad 100		ad 3iii

M. et sig: Apply to scalp once a day.

Pharmacology

[CONTRIBUTION FROM THE CHEMICAL LABORATORY OF THE AMERICAN MEDICAL ASSOCIATION.]

ATOXYL.

W. A. Puckner and A. H. Clark.

About five years ago the attention of the medical profession was directed to a new organic compound of arsenic called atoxyl, which was claimed to be a meta-arsenic anilid having the formula $C_6H_5NHAsO_3$. It was said to contain 37.69 per cent. arsenic (As). It claimed consideration because of the statement that in the form of atoxyl apparently unlimited amounts of arsenic could be administered without toxic effect.

Atoxyl was submitted to the Council on Pharmacy and Chemistry in January, 1907, and was represented to be "meta arsenite of anilid." Its examination at that time by a subcommittee of the council showed that it is not an arsenite, but an arsenate, and that in other ways the statement made in regard to its composition should be questioned. The examination of atoxyl was therefore taken up in the Association laboratory. The analysis given in detail below[1] shows that the specimen of atoxyl examined did not contain 37.69 per cent. of arsenic, as stated in the literature, but instead contained only 25.77 per cent. From the analysis and the reports of other investigators, it was concluded that atoxyl is the sodium salt of arsenic acid in which one hydroxyl radical of arsenic acid has been replaced by a molecule of anilin. Agreeing with this, the manufacturers now have adopted this formula—i. e., $C_6H_5(NH_2)(AsO.OH.ONa)$[2]— as indicating the composition of atoxyl, whereas heretofore they have given the following: $C_6H_5NHAsO_3$. While our analysis indicates that the atoxyl molecule is combined with 3 molecules of water, the results of other chemists make it appear that the water content is variable. It is desirable, therefore, that the amount of arsenic in atoxyl, as found on the market, be controlled from time to time. To facilitate such control, the method of examining atoxyl used by us is published in detail.

Since physicians in using this new compound of arsenic will wish to compare its effect with other arsenic compounds, a comparison of the dosage of atoxyl with Fowler's solution will be of interest at this time. As atoxyl contains the arsenic as an arsen*ate* while in Fowler's solution it is present as an arsen*ite*, the doses are compared by calculating in each case the weight of the element arsenic itself.

In the advertising literature it is stated for atoxyl that "forty times as much arsenic may be assimilated in this form as when the element is exhibited in Fowler's solution or other of the ordinary arsenical preparations." The average dosage is stated to be from 1/3 to 4/5 grain, given every other day. It is also stated that the dose may be cautiously increased to as much as 3 grains daily.

The ordinary dose of Fowler's solution is 3 minims, three times daily, and it may be increased to much greater quantities; 30 to 60 minims per day is no uncommon dose.

Each minim of Fowler's solution contains approximately 1/133 grains of arsenic (As), therefore the ordinary daily dose, 9 minims, contains about 1/15 grain arsenic (As), and 60 minims contain nearly ½ grain of arsenic (As).

Since atoxyl was found to contain 25.77 per cent. arsenic, the average daily dose recommended (1/3 to 4/5 grains every other day, or 1/6 to 2/5 grains per day), contains 1/94 to 1/10 grain arsenic, and the maximum daily dose of atoxyl—3 grains—contains ¾ grain arsenic.

Thus while it is stated that forty times more arsenic can be given in the form of atoxyl than in other arsenic preparations, in reality the recommended dosage of atoxyl is but one and one-half times as great as the advised dose of arsenic given as Fowler's solution.

Permanent Apomorphin Solution.—M. G. Pegurier (*Rep. de Pharm.*, xix, 1907, page 301), has advised a tedious and complicated process for preparing solutions of apomorphin which will not turn green on exposure to light. His theory is that the green color is produced by oxidation in the light, which is accelerated by the presence of ammonia in the atmosphere. To obviate this he works in a room lighted by red light and evaporates a small amount of acetic acid to neutralize the ammonia in the room. He acidifies the solution by the addition of hydrochloric acid. A. Trautmann (*Pharm. Zeitung*, 61, 1907, page 640), believes that the discoloration is due to oxidation and states that it may be prevented by the addition of alcohol. He uses the following formula:

Apomorphin hydrochlor.	0.1
Alcohol (90 per cent.)	50.0
Hydrochloric acid, dil.	10.0
Distilled water to	200.0

The apomorphin is first shaken with the alcohol and the water then added, by which process a clear solution is obtained. The acid is subsequently added. When a fresh solution is to be prepared a clean, dry glass vessel must be taken. The solution is preserved in containers of brown glass. Hermetic sealing is unnecessary.

EXAMINATION OF ATOXYL.

1. Arsenic. A weighed quantity of atoxyl was placed in a strong flask of about 150 c.c. capacity, 50 c.c. of a freshly prepared saturated solution of sulphur dioxid added, and the flask stoppered with a sound cork tied down firmly (Sutton's Vol. Analysis, 7th Ed., page 150). The flask and contents were heated in a water bath for one hour, allowed to cool, the contents transferred to an Erlenmeyer flask and evaporated on a water bath until all sulphur dioxid was expelled. After cooling the solution was made nearly neutral with sodium hydroxid, 2 gm. sodium bicarbonate added and the arsenic titrated with N/10 iodin V. S., using starch as an indicator.

(a) 0.2948 gm. atoxyl required 20.37 c.c. N/10 iodin V. S., indicating 25.71 per cent. As. (b) .5695 gm. atoxyl required 35.16 c.c. N/10 iodin V. S., indicating 25.82 per cent. As.

As a check on this method, a modification of the method for estimation of arsenic in presence of organic matter as proposed by F. A. Norton and A. E. Koch in the *Journal of the Amer. Chem. Society*, 1905, p. 1247, was tried as follows: A weighed quantity of atoxyl was placed in a Kjeldahl flask and digested with 20 c.c. concentrated sulphuric acid until clear and nearly colorless. The mixture was transferred to a flask, using about 100 c.c. water to complete the transfer, made neutral with sodium hydroxid, 2 gm. sodium bicarbonate added and the arsenic titrated with N/10 iodin V. S. 0.3727 gm. atoxyl required 25.3 c.c iodin V. S., indicating 25.25 per cent. As.

Sodium was determined by moistening a weighed quantity atoxyl with concentrated sulphuric acid carefully igniting, adding a little ammonium carbonate toward the end of the ignition and weighing the residue as Na_2SO_4.

4.519 gm. atoxyl yielded .111 gm. Na_2SO_4, indicating 7.97 per cent. Na.

Water was determined by drying at 100° to constant weight. .7717 gm. Atoxyl lost .1357 gm., indicating 17.58 per cent. The drying was continued, increasing the temperature gradually and weighing occasionally until 150° C. was reached, slight further loss was sustained. The substance turned brown, showing slight decomposition.

In March, 1907, a report by Bertheim, in the *Berl. Klin. Wochenschr.*, March 11, 1907, (footnote page 282), appeared which stated that atoxyl does not have the composition given by the manufacturers, but instead is a sodium salt of a combination of ortho-arsenic acid with aniline, containing water of crystallization and much less arsenic than claimed. Bertheim concluded that the formula of atoxyl is $C_6H_4.NH_2.AsO(OH)(ONa).1.4 + 4H_2O$.

In April, 1907, Forneau, in the *Jour. de Pharm. et Chem.*, April, 1907, p. 332, reported that atoxyl has the composition $C_6H_4NH.AsO(OH)(ONa) + 2H_2O$. That is, while Bertheim concluded that the arsenic acid radical and the amido group are in the para position, Forneau holds that the arsenic acid radical replaced one hydrogen atom of the amido group. While Bertheim assigns four molecules of water of hydration to the compound, Forneau's formula contains but two molecules. In the later article, in the same publication (June, 1907, p. 528), Forneau accepts the structure given by Bertheim. Since this formula has also been accepted by the manufacturers, no attempt was made in this laboratory to further investigate the structure of atoxyl.

The correctness of this formula is further established in a recent contribution by P. Ehrlich and A. Bertheim (Ber. d. chem. Ges., vol. xl, p. 3292).

According to Bertheim's formula, atoxyl should contain 24.09 per cent. arsenic (As) and 23.03 per cent. water of hydration. Forneau's formula indicates 27.25 arsenic (As) and 15.1 per cent. water, the difference in percentage of arsenic being due solely to the difference in amount of water.

The result of our analysis shows that atoxyl contains 25.77 per cent. arsenic (As), 7.97 per cent. sodium and 17.58 per cent. water of hydration, which agrees in theory closely with the formula $C_6H_4NH_2.AsO.OH.ONa + 3H_2O$. The results as regards the amount of water lies between those of Bertheim and Forneau.

Calculating the arsenic and sodium represented by the above formula, minus all water of hydration, 31.35 per cent. arsenic (As) and 9.64 per cent. sodium (Na) is indicated.

Calculating the amount of arsenic and sodium actually found by analysis, to such a compound 31.14 per cent. arsenic (As) and 9.67 per cent. sodium (Na) is indicated.

This shows conclusively that anhydrous atoxyl contains the theoretical amount of arsenic and sodium indicated by the formula $C_6H_4NH_2.AsO.OH.ONa$. The variation in the amount of arsenic found by different investigators evidently is due to a variation in amount of water present.

2. New and Non-Official Remedies, this issue of THE JOURNAL, p. 1029.

Correspondence

Plastic Radiography.

CLEVELAND, OHIO, Sept. 5, 1907.

To the Editor:—In THE JOURNAL, Aug. 31, 1907, page 751, Drs. Stern and Rosenberg describe a method for obtaining plastic *x*-ray photographs. While not denying that the method gives more pleasing effects than the ordinary *x*-ray photograph, it seems to me that practitioners should be warned against placing any confidence in the "plastic" appearance, which stands in no necessary relation to the actual spatial relations of the parts photographed, and in respect to these spatial relations, therefore, is always unreliable and misleading.

The method is evidently a modification of a well-known photographic dodge for obtaining exaggerated relief effects resembling bas-relief. The method consists in printing a positive from any negative, of a sufficient density nearly to neutralize all contrast. The two are placed back to back, shifted slightly on each other and a print taken, thus obtaining the exaggerated relief effects. In the method given, instead of shifting the plates, oblique illumination is used, but a consideration of the fact that the photographic film has a definite though small thickness shows that oblique illumination produces similar results and for like reasons. The relief effects are, therefore, pure artefacts depending entirely on the light and shade distribution, and thickness of film in the original plates, and the angle of illumination. The double-coated plates have the effect of softening the harshness of the contrasts obtained. As to the effect of the double exposure, I can not speak with certainty, but it can in no wise register spatial relations normal to the plate.

As *x*-ray photography in medicine is not so much interested in pretty and artistic pictures as in the accurate determination of anatomic conditions, the time spent in producing these plastic effects, which have no merit except pleasing appearance, and the fatal disadvantage that they are certainly misleading, would seem to be time worse than wasted.

For those who would be interested in an elementary mathematical discussion of the method the following is given:

Given a negative whose extinction factor F (x, y) or F, for short, is a function of the position of any point on the plate, a positive is printed from it whose extinction factor is F' (x, y) or F'. If the positive destroys all contrast when placed on the negative we evidently have the relation

$$FF' = K,$$

where K, the extinction factor of the combination, is constant over the surface of the plates. Therefore,

$$F = \frac{K}{F'}.$$

If now we shift the positive a short distance $\triangle x$ in the X direction, we have for the extinction factor of the combination K':

$$K' = K \frac{F'(x + \triangle x, y)}{F'(x, y)}$$

If $\triangle x$ is small, we can expand by Taylor's theorem and neglect higher orders in $\triangle x$..

$$K' = K \left(1 + \frac{1}{F'} \frac{\delta F'}{\delta x} \triangle x + \cdots\right)$$

Or writing $\triangle F'$ for $\frac{\delta F'}{\delta x} \triangle x$

$$K' = K \left(1 + \frac{\triangle F'}{F'}\right).$$

I. e., the lights and shades in the resulting print depend on the percentage rate of change of lights and shades in the original plate, in the direction of displacement, and vary with the magnitude and direction of the displacement, when that displacement is small.

In the above discussion the thickness of the film has been disregarded. In the case of a thick film and oblique illumination it would be necessary to replace log. F (x, y) by an integral of the form $\int f(x, y, z)dz$. Without more knowledge of the distribution of the silver deposit in the film, along the normal to the plate, no definite results can be arrived at, but in *any* case the results can not differ essentially from the simpler case discussed above. Therefore, "according to the law and the prophets," the results experimentally obtained are just what, *a priori*, one might predicate.

J. E. TUCKERMAN, M.D.

[By an error in the publication of the article referred to, the printing plates of Figures 1 and 2 were transposed. This fact is not referred to by Dr. Tuckerman, doubtless because it is self-evident on inspection by any one familiar with Roentgenographs. Furthermore, it has nothing to do with Dr. Tuckerman's remarks, but we mention it to prevent confusion in the minds of a few.—ED.]

Ivy Poisoning.

FULDA, MINN., Sept. 4, 1907.

To the Editor:—An abstract of several articles on "Efficient Treatment of Ivy Poisoning" was published in THE JOURNAL, Aug. 31, 1907, page 789. Dr. Syme advises against the use of alcohol in this affection. I, on the contrary, have satisfied myself, after considerable experience with this affection, that no other remedy is so efficient if properly used.

Many years ago Prof. Theo. G. Wormley, I believe, suggested the use of hyposulphite of soda. I, therefore, prescribe a 1 per cent. solution of this salt in 95 per cent. alcohol. When a patient with ivy poisoning comes to me within forty-eight hours after the eruption appears, I wash the affected part thoroughly and repeatedly with the above mixture, directing the patient to continue its use in the same manner every four hours. Following this plan, I have often cured these patients in two days. Severe cases, first seen late, are also benefited by its use, but I here find that lead acetate is better than the hyposulphite of soda. Later, when the poison is neutralized, soothing ointments may be used.

Since alcohol dissolves the toxin, its free use washes it away and Nature does the rest.

EMIL KING, M.D.

MANILA, P. I., Aug. 12, 1907.

To the Editor:—I have found tincture of lobelia a specific for ivy poisoning. I am aware that this is a very old remedy, but as some practitioners may never have tried it, I suggest that you publish the following prescription:

R.	gm.	
Tincturæ lobeliæ		
Cretæ preparatæ, āā.....	30	or ℥i

M. Sig.: Apply locally.

J. PEREZ.

County Society Supervision of Pure Milk Production.

LOUISVILLE, KY., Sept. 11, 1907.

To the Editor:—I note in THE JOURNAL, September 7, the letter from Dr. C. G. Parnall of Jackson, Mich., with editorial comment following and lest some may infer from reading it that this method of procedure is new, I write to correct any such impression.

This work by the committee appointed by the Jackson County (Mich.) Medical Society is the same that is being accomplished by twenty or twenty-five medical milk commissions located in cities from Boston to Los Angeles. The importance of the work of these milk commissions was emphasized by a notable gathering at Atlantic City the day preceding the American Medical Association meeting. This meeting was called at the instance of Dr. Henry L. Coit of Newark, N. J., founder of the first medical milk commission, and Dr. Otto P. Geier of Cincinnati. At this meeting the American Association of Medical Milk Commissions was organized.

In Louisville the Jefferson County Milk Commission certifies to the product of three dairies and is ready to certify to the product of any dairy which will meet its requirements. One dairyman has just been fined $20 and costs as a result of a suit brought by the State Pure Food Commission for using the term "certified" on his milk when it was not certified by the county commission. This dairyman had been invited by the commission to produce certified milk under their requirements, but had refused.

In view of the importance of the work being done by the American Association of Medical Milk Commissions in spreading knowledge of the character of work which can be done by commissions appointed by county societies, we feel that as much prominence should be given to their work as to the work of the Jackson County committee.

HENRY ENOS TULEY.

[Our comments, to which the above refers, called attention to the work of a county society, and gave an abstract of the details of that work. The object of the comment was to suggest to other county societies to take up similar work, for, in most instances, if the county society does not do it, it will not be done. This propaganda for the pure milk supply in large cities, and even in small towns, is world-wide, for there is an appreciation in practically every civilized country of the part that milk may play in the spread of disease, and the necessity of its regulation in the interest of public health.—EDITOR.]

The Rocking Chair for the Fowler Position.

COLUMBUS, OHIO, Sept. 9, 1907.

To the Editor:—One of the greatest advances in the treatment of purulent peritonitis we owe to Dr. Fowler, who first suggested putting the patient in a semi-recumbent position after operation in order to secure better drainage, and to keep the pus as much as possible from the upper portion of the abdomen where absorption is rapid. His suggestion was to elevate the head of the bed. I used this method in a number of cases, but found it rather difficult to keep the patient from sliding down toward the foot. A number of devices were resorted to to prevent this, but none of them were entirely satisfactory. I then tried to get up some sort of a mechanical device which could be placed on the bed and which would answer the purpose better. It finally struck me that a rocking chair would furnish just the kind of support which was needed, and for the last two years I have used that method exclusively, and have found it to be in every way entirely satisfactory. A large, comfortable chair should be selected, with good, wide arms, if possible, and then with a few pillows and blankets the patient can be made exceedingly comfortable, while his position can be slightly changed up or down, or the chair can be moved from one part of the room to another. By a suitable arrangement of the pillows in the bottom of the chair a rectal tube is easily inserted for salt solution or nutritive enemata. Such a chair can be found in every house. A friend recently told me that some such device as I had in mind was exhibited at the last meeting of the Association.

J. F. BALDWIN, M.D.

Schools for Cure of Stammering.

PHILADELPHIA, Sept. 5, 1907.

To the Editor:—Among the many forms of quackery now so prevalent there is probably none so seductive or so susceptible of harm, at least to the patient's pocketbook, as the average institution for the cure of stammering and other defects of speech. The following letter, sent to a patient in reply to a request for information with reference to the treatment of a defect of speech due to a cleft palate, is typical and illustrative of the methods employed:

My Dear Sir:—Glad to give you the best of cheer, in the assurance that your case falls well within the purview of my art. One of the most successful pieces of work I ever did was with a Miss T., of Phoenixville, Pa., who had precisely the elements of difficulty that you describe.

In a few days her stammering has disappeared, and then, in a week or two she could say all sounds that she had missed, by reason of the root trouble; and then I addressed myself to the task of putting the sweet, silver tones into her voice, in place of that unpleasant nasal drawl, and in six weeks from the time she started, it was all accomplished. I give you my word of honor as a Christian minister that I can relieve you entirely, and give you a perfectly natural voice.

We do not encourage the hope of a perfect cure, in such cases, unless one will come to us, so that we may superintend the process from start to finish. Is it yourself or your sister, or both of you? I have mailed you both my booklet. You will see from title page that I cover all such cases. I guarantee each case, or to refund the price. Our best rate has passed, but as you live some distance, and to induce immediate attendance I will take you for $100, board being extra at $5.00 a week. When can you come? Hoping to hear from you soon and to have you enter early,

I am yours cordially,

Every one knows how impossible it is to give to an adult cleft palate patient a "perfectly natural voice," but here is one who on his "word of honor as a Christian minister" can not only accomplish this impossible task but can also put "sweet, silver tones" into the voice, and that, too, in the brief space of six weeks. The "guarantee" and "refund the price" clause, of course, is not omitted.

Although no such cure as described in the foregoing letter has ever been, or can be, accomplished who has ever heard of the price being refunded?

Stammering is a serious nervous affliction and the unfortunate subjects are, therefore, particularly susceptible to such deceptive literature, especially when it holds out to them the hope of a cure. If the true nature of these so-called schools for the cure of stammering were understood, fewer names of prominent men (including physicians, I regret to have to add) would appear in their advertisements.

G. HUDSON-MAKUEN.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, CONTRACT PRACTICE, INSURANCE FEES, MEDICAL LEGISLATION, ETC.

POSTGRADUATE COURSE.

Suggested Course of Study for Use by County Societies Now Ready.

The outline for the first six months of the "Course of Postgraduate Study," for which provision was made in June at Atlantic City, is now ready for distribution in pamphlet form. It is desired that this be placed in the hands of each county secretary in the United States and that the officers of each state society, especially the councilors, familiarize themselves with the plans and details of the work. It will also be sent to each state journal so that those desiring to do so may print the outline for each month's work. It is expected that most societies will have to adapt this outline to their needs, many of them doubtless not following it in detail.

"Suggestions" concerning the course, as well as the outline or skeleton program for the first month and the elaboration for the weekly meetings, appear below. The outline for each month will appear in THE JOURNAL.

For further information or suggestions concerning the course of study, write to Dr. John H. Blackburn, Bowling Green, Ky.

SUGGESTIONS FOR THE USE OF THE COURSE.

1. A skeleton program for the first month will be found below, followed by an "Elaborated Weekly Program" for each weekly meeting in the month. It is expected that the secretary or program committee of each county society will use this skeleton program in assigning work to the leaders or teachers. Each teacher will then find his subject outline in the elaborated weekly program.

2. *Essentials to a Successful Meeting:* Meet promptly. Arrange that only those who are prepared shall lead in any subject. Allow 45 minutes to teacher, if only one; 25 minutes each, if two; 15 minutes each, if three. Allow five minutes to each member to discuss the subject or to ask questions.

3. *Anatomy:* Discuss those structures that will undergo morbid changes as a result of the particular disease under consideration, exhibiting gross and microscopic specimens when possible. Demonstrate fresh specimens from the lower animals, if those from the human are not obtainable.

4. *Physiology:* Study the functions of those organs which undergo changes.

5. *Pathology:* Study the pathologic anatomy and physiology, and their relations to the symptoms presented.

6. *Bacteriology:* Study the morphology and biology of bacteria, and the methods of recognizing and differentiating them.

7. Present clinical cases or brief reports, bearing on the subject, whenever possible.

8. *Treatment:* Study materia medica, pharmacology and therapeutics, exhibiting crude drugs and their U. S. P. and N. F. preparations. Encourage members or classes to carry

out experiments on animals in regard to the effects of drugs. Emphasize the work of the Council on Pharmacy and Chemistry. Prescription writing, with blackboard demonstrations, should be made a prominent feature whenever practicable.

9. *Reporter:* It is insisted that there should be a reporter for every society, whose duty it shall be to present a digest or review of the recent literature of the subject of study for that month.

10. Adjourn promptly one and a half hours after the time for the meeting to be called to order.

FIRST MONTH.

TUMORS.

First Weekly Meeting.

Anatomy and Histology. (Exhibit Microscopic Sections.)
1. Epithelial Tissue.
2. Connective Tissue.
3. Muscular and Nervous Tissue.

Second Weekly Meeting.

Differential Diagnosis of Malignant and Benign Tumors.

Location, Varieties and Microscopic Appearance:
1. Fibroma, Lipoma.
2. Chondroma, Osteoma, Myoma.
3. Myxoma, Neuroma, Glioma.

Third Weekly Meeting.

4. Angioma, Lymphangioma.
5. Sarcoma.
6. Carcinoma.

Fourth Weekly Meeting.

7. Papilloma, Adenoma.
8. Dermoids, Cysts.

Cancer of Uterus.

Monthly Meeting.

Etiology of Carcinoma.
Probability of Recurrence in Sarcoma and Carcinoma.
Benign Tumors of Breast, Diagnosis and Treatment.

First Weekly Meeting.

ANATOMY—MICROSCOPIC SECTIONS.

Epithelial Tissue.

Origin, Structure, Cells and Stroma.

Varieties: Simple and compound.
Shape, Arrangement and Distribution: (1) pavement, (2) cubical, (3) columnar, and (4) ciliated. Describe ciliary motion, causes.
Transitional Epithelium: Arrangement, distribution and location.
Stratified Epithelium: Shape, arrangement and distribution.
Nutrition of Epithelium: Chemistry of epithelium.

Connective Tissues.

Origin, Structure, Function.

Areola: Distribution, structure. Microscopic appearance, cells, matrix, white and yellow fibers.
Fibrous: Distribution, structure, functions.
Elastic: Structure, distribution, histology.
Adipose: Distribution, structure, function, nutrition.
Lymphoid and Retiform: Distribution, histology.
Jelly-like: Structure, chemistry, distribution.
Cartilage: Varieties, structure, function, chemistry.
Bone: Chemistry: structure (gross and microscopic), nutrition.
Blood: Corpuscles (red and white), plasma, serum and fibrin.

Muscular Tissue.

Origin, Voluntary and Involuntary.

Striated and Plain. Distribution of each.
Striated, Voluntary: Epimysium, perimysium, endomysium. Sarcolemma and contractile substance. Sarcomere, sarcostyle and contraction. Attachment to tendon. Nutrition of muscle. Nerve supply.
Plain, Involuntary: Distribution. Shape, size, arrangement of cells.
Cardiac Muscle: Differs from others.

Nervous Tissue.

Origin. Central and Peripheral Systems.

Cells and Fibers. Distribution.
Fibers.—Medullated: Sheath, axis, cylinder, neurilemma, nuclei, nodes of Ranvier.
Non-medullated: Transverse and longitudinal sections.
Cells: The neuron, cell body, dendrites, axite.
Bipolar cells, distribution, function, description.
Multipolar cells, Golgi cells, two types.
Histology of the cell, staining, shape, size, etc.
Nerve degeneration and regeneration.

Second Weekly Meeting.

Differential Diagnosis of Malignant and Benign Tumors.

(1) Mobility, (2) capsule, (3) vascular supply, (4) rate of growth, (5) pain, (6) infiltration, (7) recurrence, (8) lymphatic involvement, (9) metastasis.
Fibroma: Gross and microscopic appearance, distribution.
Lipoma: Size, number, distribution, varieties, gross and microscopic appearances.
Chondroma: Varieties, distribution, gross and microscopic appearances.
Osteoma: Varieties, number, gross and microscopic appearances. Odontomes.
Myoma: Distribution, mixed tumors, gross and microscopic appearances.
Myxoma: Gross and microscopic appearances. Secondary changes.
Neuroma: Pathology, number, distribution.
Ganglionic neuroma. Neurofibromatosis. Molluscum fibrosum.
Glioma: Microscopic changes.

Third Weekly Meeting.

Angioma.

Structure.

Simple Nevus: Varieties, structure of each, distribution.
Cavernous Nevus: Structure, distribution, prognosis.
Plexiform Angioma: Structure, distribution.

Lymphangioma.

Structure.

Lymphatic Nevus: Microscopic changes, distribution.
Cavernous Lymphangioma: Structure.
Lymphatic Cysts: Structure, occurrence, distribution, prognosis.

Sarcoma.

Structure, Varieties.

Round-Celled Sarcoma: Microscopic section, distribution, age, prognosis.
Lymphosarcoma: Microscopic section, distribution, age, prognosis.
Spindle-Celled Sarcoma: Microscopic section, distribution, prognosis.
Alveolar Sarcoma: Microscopic section, origin, distribution.
Melanosarcoma: Microscopic section, pigment, origin, distribution, prognosis.
General Characters of Sarcoma: Vascular supply, metastasis, capsule, infiltration, lymphatic supply, secondary changes, distribution.

Carcinoma.

Origin, Microscopic Structure, Varieties.

Glandular Cancer: Distribution, gross and microscopic appearances, lymph- and blood-vessels, secondary changes, differentiate from adenoma.
Squamous-Celled Cancer: Distribution, gross and microscopic appearances, characteristic margin, infiltration, secondary changes.

Fourth Weekly Meeting.

Papilloma.

Origin, Structure, Varieties.

Warts: Microscopic section, distribution, number, pigment, secondary changes.

Villous Papilloma: Structure, gross and microscopic, prognosis.

Intracystic Papilloma: Structure, gross and microscopic, distribution.

Psammoma: Structure, chemistry, location, prognosis.

Adenoma.

Structure, varieties, capsule, fluid, recurrence, infiltration, secondary changes.

Dermoids.

Structure, Distribution.

Sequestration Dermoids: Location, mode of origin, contents, prognosis.

Tubulo-Dermoids: Distribution, contents, size.

Lingual, Branchial and Rectal: Location of each.

Ovarian Dermoids: Origin, structure, contents, size, age.

Moles: Distribution, structure, secondary changes.

Teratoma.

Differentiate from dermoids.

Cysts.

Mode of Origin, Structure, Contents.

Retention cysts, tubulo-cysts, hydroceles and gland cysts.

Cancer of Uterus.

Cancer of Cervix.

Pathology—Squamous Celled: Origin, gross and microscopic changes in cervix, excrescences, degenerative changes, ulceration, excavation, extension to vagina.

Adenocarcinoma: Origin, changes in cervix, rate of growth, secondary changes.

Extension to surrounding structures. Metastasis.

Diagnosis: History, age, child-bearing. Hemorrhage, leukorrheal discharges, pain. General symptoms, cachexia, etc. Physical examination, touch, sight and smell. Differences between squamous-celled and adenocarcinoma in early stages. Microscopic examination. Method of getting specimens, staining and mounting. Differentiate normal and malignant specimens.

Treatment: Prophylactic—Repair of lacerated cervix.
Radical—Hysterectomy, probability of recurrence.
Palliative—Curettement and cauterization, medicinal treatment.
Use of X-rays.

Cancer of Body of Uterus.

Pathology: Adenocarcinoma, origin, extent of growth, degeneration, ulceration, extension through wall, rate of growth. Extension to adjacent structures. Metastasis.

Diagnosis: Age, child-bearing. General symptoms, hemorrhage, discharge, pain. Physical signs by touch, sight and smell. Microscopic examination, only means for early diagnosis.

Treatment: Radical, hysterectomy, technic. Palliative.

Queries and Minor Notes

THE "THERAPEUTIC GAZETTE" AND NOSTRUM ADVERTISING.

Langdon, N. Dak., Aug. 23, 1907.

To the Editor:—Will you kindly inform me as to the standing of the *Therapeutic Gazette*, edited by H. A. Hare and Edward Martin? Please don't think that I am an ignoramus to ask such a question, when I see the name of one of our chief writers on therapeutics and medicine as one of the editors; but allow me to explain myself. Since coming to live and practice medicine in this country—a little over a year ago—I have been a constant reader of The Journal, and I have noticed with especial pleasure your fight against quackery and fraud in all and every form, your exposure of the false claims put forward by manufacturers of proprietary and "patent medicines"—e. g., anasarcin, anedemin, pepto-mangan (Gude)—and your endeavor to have journals of every form clean the false rubbish from their advertising pages. Now I think I may be excused for asking the above question, when I find every month advertised in the advertising pages of the *Therapeutic Gazette* such preparations as the above mentioned, to say nothing of such preparations as glycothymolin, hyo-sco-phin, antiphlogistin, listerin, Tyree's antiseptic powder, tongalin, syrupus roborans, glyco-heroin, campho-phenique, bovinin, katharmon, thallon, Gray's glycerin tonic, urliseptin, echitone and Fellow's syrup of hypophosphites. I know, or at least believe, that advertisements in a journal help to pay expenses and so lower the price of the journal to the subscriber, but if lay journals and papers are being pressed to refuse good incomes in the fight for truth, much more so surely should medical journals keep their pages clean. I am quite confident from what I have seen and heard that there are many young physicians—and, I am sorry to say, some old ones also—who will use any sort of a new preparation so long as they find it advertised in what they consider "a good medical journal," and at the same time many of them would scorn to place any belief in advertisements seen in lay journals. It is wonderful how easily some physicians will excuse their own laziness or ignorance in the matter of proper therapeutics, and I am really sorry to see that they can find such an excuse.

J. J. Mugan, M.D.

Answer.—The *Therapeutic Gazette* is owned and published by Parke, Davis & Co., although the name of their manager, E. G. Swift, is given as publisher. Such an arrangement has been in effect during the régime of their last three managers. The reason for this is not apparent, but it certainly can not be that the firm does not care to father the character of its reading pages, as they are of an unusually high quality.

As for the present status of the advertising pages, the firm is, in a measure, to be congratulated, for we no longer find there "The Original Lymph-Orchitic Fluid Compound, Roberts-Hawley;" the great acetanilid trio, "Antikamnia," "Ammonol" and "Phenalgin;" nor "Glycozone" and "Hydrozone," which are said to cure anything from a sore throat to yellow fever, and which are advertised alike to the public and to the profession. "Laborline," which was exposed in The Journal last March, has gone; "Duffy's Malt Whiskey" and "Micajah's Medicated Uterine Wafers" (that relative of "Piso's Consumption Cure") are also missing. To find that these have been dropped is encouraging.

As intimated by our correspondent, however, there is yet considerable room for improvement, and as an illustration we take the following from the last (August) issue of the *Therapeutic Gazette*, the wording of which should have been sufficient reason for its rejection:

"Ungt. Cadinol. Comp.

"The most wonderful remedy ever offered the medical profession in the treatment of Eczema, Pruritus, Burns, Scalds, Erysipelas, Hemorrhoids, Acne, etc.

"We will guarantee *Ungt. Cadinol Comp.* to cure any and all burns or scalds, without leaving scar tissue or disfiguration. We also guarantee Ungt. Cadinol Comp. to cure any case of Eczema or Pruritus."

Could any statement be more ridiculous or asinine when placed before a body of supposedly intelligent, educated physicians? Parke, Davis & Co. have scientists, including eminent chemists, pharmacologists and pharmacists, in their employ, hence it can not be laid to ignorance that such statements and such nostrums are permitted to appear in their publication. Neither would it be just to lay it to mendaciousness on their part, but rather to the ambition of the business department to make a good financial showing. However, it is now time for those firms that are sincere and desire to cooperate with the medical profession in getting rid of fraudulent nostrums, to "get off the fence" and show their colors. Parke, Davis & Co., we are sure, can afford, and want to be on the side of decency and honesty, and will sacrifice the—to them—comparatively small revenue they get from those who use their journal to delude and humbug the medical profession.

WARBURG'S TINCTURE—TINCTURA ANTIPERIODICA.

Red Cliff, Colo., Sept. 8, 1907.

To the Editor:—Kindly inform me through The Journal what is Warburg's Tincture, its dose and uses.

Paul R. Siberts.

Answer.—Warburg's tincture was originally a proprietary medicine invented by Dr. Warburg, a British army surgeon in India, who later revealed the formula. With some modification it has been adopted into the National Formulary as "Tinctura Antiperiodica." The original formula included "confectio Damocratis," an antiquated combination containing over thirty ingredients, some of which are now unobtainable. This is contained in the original formula in such small quantities that it has probably no therapeutic influence and has been omitted from the official formula. Tinctura antiperiodica, N. F., consists of 8 gm. each of rhubarb and angelica

seed, 4 gm. each of elecampane, saffron, fennel, prepared chalk, 2 gm. each of gentian, zedoary, cubeb, myrrh, camphor and white agaric, 0.25 gm. opium, 0.35 gm. black pepper, 0.75 gm. cinnamon, 0.75 gm. ginger, 20 gm. quinin sulphate, with enough alcohol and distilled water to make 1,000 c.c. The tincture with aloes is made by adding to the above formula 17.5 gm. of extract of aloes. The dose is from 4 to 16 c.c., 1 to 4 drams. The mixture was introduced as a remedy for malarial fever, for which it has been warmly recommended, especially in chronic and cachectic cases and in cases in which quinin has failed. It is a conspicuous example of polypharmacy and of the tendency of those who introduce proprietary mixtures to complicate them in such way that the effective ingredients can not be separated from the inert rubbish which accompanies it. Such mixtures handed on from one generation of physicians to another complicate pharmacy and therapeutics, but if the essential ingredient were known it might afford opportunity for advance in knowledge by the investigation of similar substances or by its application to other analogous diseases.

ORIGIN OF PRESCRIPTION SYMBOLS.

CHICAGO, Sept. 13, 1907.

To the Editor:—In THE JOURNAL of Aug. 10, 1907, page 514, a correspondent asks for information regarding the derivation of the ounce, dram and scruple signs used in prescription writing. In Gould's book, "Suggestions to Medical Writers," the chapter on medical paleography gives the following explanation: The first stroke of the sign ℥ is the letter *u* of *uncia* (ounce) straightened out, the remainder of the symbol being the slurred, cursive form of the semicolon. It should be said that the semicolon was originally used to denote the elision of the final *-ue* and *-et* in many Latin words, but later was used to signify the omission of any final syllable. In writing this abbreviation—the semicolon—the dot and the comma were doubtless connected by a curved line, and the resulting sign was inaccurately represented by the modern printer by the letter *z*. Hence the final *z* in abbreviations, such as *viz.* (videlicet), *oz.* (uncia-ounce), etc. The sign for dram (drachma) ʒ shows how in the evolution of language the sign of a contraction may become the sign of the whole word, for the *d* has disappeared entirely. In the sign for scruple the old-fashioned long *s* (drawn out like the modern italic *f* without the cross-bar) is crossed by the cursive form of the *r* and the combination conventionalized until its original form is lost. A. J. C.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Sept. 14, 1907:

Morse, C. F., asst.-surgeon, granted 10 days' leave of absence, effective Oct. 1, 1907.

Woodall, W. P., asst.-surgeon, granted 30 days' leave of absence.

Kierstead, H. S., asst.-surgeon, on expiration of the leave of absence granted in S. O. 58, March 11, 1907, War Department, will proceed to Presidio of Monterey, Cal., for duty.

Farr, C. W., asst.-surgeon, relieved from further duty in the Philippine Islands, and on expiration of present leave of absence will proceed to Fort McKinley, Me., for duty.

The following will, on their arrival at San Francisco, in compliance with orders heretofore issued, report at the stations set opposite their names: Morse, A. W., asst.-surgeon, Fort Leavenworth, Kansas; Yost, J. D., asst.-surgeon, Fort Lawton, Washington; Gosman, G. H. R., asst.-surgeon, Columbus Barracks, Ohio; Zinke, S. G., asst.-surgeon, Fort Leavenworth, Kansas; Culler, R. M., asst.-surgeon, Fort Slocum, N. Y.; Bailey, H. H., asst.-surgeon, Fort Myer, Va.

Crosby, W. D., surgeon, detailed as member of the Army Retiring Board, appointed to meet in Washington, D. C., by Par. 8, S. O. 239, Oct. 9, 1906, War Department, vice Major James D. Glennan, surgeon, hereby relieved.

Phalen, J. M., asst.-surgeon, is detailed as a member of the board of medical officers, appointed by Par. 21, C. O. 16, Jan. 19, 1906, War Department, for the study of tropical diseases as they exist in the Philippine Islands, vice Capt. P. M. Ashburn, asst.-surgeon, hereby relieved.

Ford, J. H., Ashburn, P. M., Winn, R. N., Roberts, W. M., Van Poole, G. McD., Thornburgh, R. M., Van Dusen, J. W., Shepard, J. L., Peed, G. P., Davis, W. R., Siler, J. F., and Cole, C. LeR., asst.-surgeons, are relieved from duty in the Philippines Division, to take effect at such time as will enable them to comply with this order, and will proceed on the transport to sail from Manila on or about Nov. 15, 1907, to San Francisco, and on arrival will report by telegraph to the Adjutant General of the Army for further orders.

The following will report in person, on the dates specified, to Major William H. Arthur, surgeon, president of the examining board at the Army Medical Museum Building, Washington, D. C., for examination to determine their fitness for advancement: Clark, J. A., and Kilbourne, E. D., asst.-surgeons, October 4. Coffin, J. M., and LeWald, L. T., asst.-surgeons, October 8. Morris, S. J., and Hanner, J. W., asst.-surgeons, October 11. Hathaway, L. M., and Powell, W. A., asst.-surgeons, October 15. Talbott E. M., and Fife, J. D., asst.-surgeons, October 18.

Winter, F. A., surgeon, detailed a member of examining board, Army Medical Museum Building, Washington, D. C., for the promotion or advancement of medical officers during the absence of Major W. D. McCaw, surgeon.

The following will report in person, on the dates specified, to Lieut.-Col. George H. Torney, dept. surgeon general, president of the examining board, at the General Hospital, Presidio of San Francisco, for examination to determine their fitness for advancement: Harris, J. R., and Scott, G. H., asst.-surgeons, October 1; Huntington, P. W., and Carswell, R. L., asst.-surgeons, October 8.

Crosby, W. D., Mason, C. F., and Winter, F. A., surgeons, appointed members of a board of officers to meet at the Army Medical Museum Building, Washington, D. C., on Sept. 17, 1907, for the examination of such officers of the Medical Department as may be ordered before it to determine their fitness for promotion.

Flagg, C. E. B., asst.-surgeon, ordered to report in person on Sept. 17, 1907, to Major W. D. Crosby, surgeon, president examining board, Army Medical Museum Building, Washington, D. C., for re-examination to determine his fitness for promotion.

Pipes, H. F., asst.-surgeon, in addition to his other duties at the General Hospital, Washington Barracks, D. C., is assigned to duty with Co. C., Hosp. Corps, relieving First Lieut. J. B. Huggins, asst.-surg., who, on being thus relieved, will report to the commanding officer, General Hospital, Washington Barracks, D. C., for duty.

Wadhams, S. H., asst.-surgeon, assignment to duty in the Philippine Islands, revoked.

Culler, R. M., asst.-surgeon, assignment to duty at Fort Slocum, N. Y., revoked, and instead ordered to Fort Monroe, Va., for duty at that station.

Smith, L. L., asst.-surgeon, relieved from temporary duty at Fort Monroe, Va., and ordered to return to station, West Point, N. Y.

Nelson, K., asst.-surgeon, granted four months' leave of absence.

Arthur, W. H., surgeon, granted 15 days' leave of absence.

Marshall, J. S., examining and supervising dental surgeon, reported at Camp Yosemite, Cal., for temporary duty.

Worthington, J. A., contract surgeon, will proceed from Fort Oglethorpe, Ga., to Fort Moultrie, S. C., for temporary duty.

Archer, W. M., Jr., contract surgeon, reported at Fort Sam Houston, Texas, for duty.

Bell, R. P., contract surgeon, ordered from Fort Levett, Me., to his home, Baltimore, Md., for annulment of contract.

Dillon, G. P., contract surgeon, left Fort Bliss, Texas, for Fort Clark, Texas, for temporary duty.

Lincoln, H. F., contract surgeon, left Fort Robinson, Neb., for Fort Leavenworth, Kansas, for duty.

Wall, F. M., contract surgeon, left Fort Oglethorpe, Ga., for Fort Moultrie, S. C., for temporary duty.

Wells, F. M., contract surgeon, returned to duty at Fort Robinson, Neb., from temporary duty at Fort Leavenworth, Kansas.

Enders, W. J., contract surgeon, granted leave of absence for one month.

Jarrett, A. R., contract surgeon, will proceed from Fort Hamilton, N. Y., to Fort Myer, Va., to accompany squadron, 13th Cavalry, to Gettysburg, Pa., and return.

Stockard, J. K., contract surgeon, leave of absence extended ten days.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending September 14, 1907.

Price, A. F., medical director, detached from duty as member of the naval retiring board, Washington, D. C., and ordered to continue other duties.

Gunnell, F. M., medical director, retired, detached from duty as senior member of the naval examining and naval medical examining boards, Washington, D. C., and ordered home.

Myers, T. D., P. A. surgeon, retired, detached from duty in connection with the naval medical school, Washington, D. C., and ordered home.

Fauntleroy, A. M., P. A. surgeon, detached from the naval station, Tutuila, Samoa, and ordered to the naval hospital, Mare Island, Cal.

Rossiter, P. S., P. A. surgeon, detached from the Naval Academy and ordered to the naval station, Tutuila, Samoa.

Hough, L. W., surgeon, detached from the naval hospital, Annapolis, Md., and ordered to Washington, D. C., Sept. 16, 1907, for examination for appointment as assistant surgeon in the Navy, and then to wait orders.

Clayton, A. H., acting asst.-surgeon, appointed acting asst.-surgeon from Sept. 5, 1907.

Curtis, E. E., asst.-surgeon, detached from the naval hospital, Norfolk, Va., and ordered to the *Culgoa*.

Wells, H., medical inspector, detached from command of the naval hospital, Boston, and granted sick leave for three months.

Straeten, R. J., asst.-surgeon, detached from the naval hospital, Mare Island, Cal., and ordered to instruction at the naval medical school, Washington, D. C., September 30.

Stibbens, P. H., asst.-surgeon, detached from the naval training station, Newport, R. I., September 22, and ordered to instruction in the naval medical school, Washington, D. C., September 30.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ended Sept. 11, 1907:

Wertenbaker, C. P., surgeon, assigned to duty as sanitary officer of the Jamestown Ter-Centennial Exposition, effective Sept. 7, 1907.

Rosenau, M. J., P. A. surgeon, granted leave of absence for 6 days from Sept. 1, 1907, on account of sickness.

Blue, Rupert, P. A. Surgeon, relieved from duty at the Jamestown Ter-Centennial Exposition, and directed to proceed to San Francisco for special temporary duty.

Oakley, J. H., P. A. surgeon, directed to proceed to Seattle, Washington, for special temporary duty; on completion of which to rejoin his station at Port Townsend, Washington.

Lofer, L. E., P. A. surgeon, directed to proceed from Englewood, N. J., to Morris Heights, N. Y.

Lavinder, C. H., P. A. surgeon, granted leave of absence for 5 days from Sept. 13, 1907.

Goldberger, Joseph, P. A. surgeon, granted leave of absence for 5 days from Aug. 26, 1907, on account of sickness.

Korn, W. A., P. A. surgeon, granted leave of absence for two months from Sept. 21, 1907, with permission to go beyond the seas.

Rucker, W. C., P. A. surgeon, temporarily relieved from duty at the Jamestown Ter-Centennial Exposition and Vineyard Haven, Mass., and directed to proceed to San Francisco, reporting to P. A. Surgeon Blue for special temporary duty.

Roberts, Norman, asst.-surgeon, granted leave of absence for 7 days from Sept. 11, 1907, under Paragraph 191 Service Regulations.

Stiles, Ch. W., chief Division of Zoology, Hygienic Laboratory, detailed to represent the service at the meeting of the International Dermatological Congress, New York City, Sept. 10, 1907.

Brinckerhoff, W. R., director Leprosy Investigation Station, excused from duty, without pay, for a period of 28 days, from Sept. 14, 1907.

Cleaves, F. H., acting asst.-surgeon, granted leave of absence for 6 days from Aug. 26, 1907, under Paragraph 210 Service Regulations.

Griffitts, T. H. D., acting asst.-surgeon, granted leave of absence for 7 days from Sept. 3, 1907, under Paragraph 210, Service Regulations.

James, W. F., acting asst.-surgeon, leave of absence granted for 15 days from Aug. 17, 1907, revoked.

Kennard, K. S., acting asst.-surgeon, granted leave of absence for 28 days from Sept. 10, 1907.

Saulty, Charles W., Jr., acting asst.-surgeon, granted leave of absence for 4 days from Sept. 10, 1907.

Turner, L. A., acting asst.-surgeon, granted leave of absence for 6 days from Sept. 3, 1907, under Paragraph 210, Service Regulations.

Walker, T. Dyson, acting asst. surgeon, granted leave of absence for 4 days from Sept. 11, 1907.

BOARDS CONVENED.

A board of officers was convened to meet at Seattle, Wash., for the examination of alien immigrants. Detail for the board: P. A. Surgeon J. H. Oakley, Chairman; P. A. Surgeon M. J. White; and Acting Asst. Surgeon F. R. Underwood, Recorder.

A board of officers was convened to meet at Wilmington, N. C., for the purpose of examining cadets in the Revenue-Cutter Service. Detail for the board: P. A. Surgeon C. H. Lavinder, chairman, and Acting Asst.-Surgeon Thomas M. Green, recorder.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended Sept. 13, 1907:

SMALLPOX—UNITED STATES.

Alaska: St. Michael, Aug. 7, 1 case.
California: Sacramento, July 1-30, 1 case; San Francisco, Aug. 18-24, 3 cases.
Indiana: Anderson, Aug. 1-31, 1 case; Indianapolis, Aug. 26-Sept. 1, 1 case; Marion, Aug. 1-31, 3 cases.
Kentucky: Covington, Sept. 1-7, 1 case.
Louisiana: New Orleans, Aug. 25-31, 1 case (imported).
New York: Buffalo, Aug. 26-31, 1 case.
North Carolina: 17 Counties, July 1-31, 141 cases; Greensboro, Aug. 25-31, 2 cases.
Ohio: Dayton, Aug. 25-31, 1 case.
Oregon: General, June 1-30, 11 cases, 1 death; July 1-31, 6 cases.
Texas: San Antonio, Aug. 18-24, 2 cases.
Virginia: Eight counties, July 1-31, 21 cases.
Washington: Tacoma, Aug. 18-24, 1 case.
Wisconsin: Milwaukee, Aug. 30-Sept. 4, 2 cases.

SMALLPOX—FOREIGN.

Argentina: Rosario, June 1-30, 19 deaths.
Australia: New South Wales, New Castle, June 1-30, 1 case.
Austria: Vienna, Aug. 11-17, 6 cases.
Brazil: Rio de Janeiro, July 29-Aug. 4, 6 cases, 1 death.
France: Paris, July 29-Aug. 4, 7 cases, 1 death.
Greece: Piraeus, Aug. 11-17, 1 case.
India: Bombay, July 24-Aug. 6, 3 deaths; Madras, July 27-Aug. 2, 1 death.
Java: Batavia, July 21-27, 2 cases.
Madeira: Funchal, Aug. 14-25, 6 cases, 3 deaths.
Portugal: Lisbon, Aug. 11-17, 4 cases.
Russia: Moscow, Aug. 4-10, 3 cases; Riga, May 1-31, 16 deaths; St. Petersburg, July 28-Aug. 3, 1 case.
Spain: Barcelona, Aug. 18-27, 3 deaths; Valencia, Aug. 19-25, 10 cases, 4 deaths.
Turkey in Europe: Constantinople, Aug. 18, 1 death.
Turkey in Asia: Bagdad, to Aug. 3, present.

CHOLERA.—UNITED STATES.

Maryland: Baltimore, Sept. 1-7, in quarantine, 8 cases from Norwegian *S. S. Aapol*, from Dalquire.

CHOLERA—FOREIGN.

India: Bombay, July 24-Aug. 6, 69 deaths; Calcutta, July 21-27, 2 deaths; Madras, July 27-Aug. 2, 5 deaths.
Japan: Yokahama, Aug. 3, 5 cases, 3 deaths; (on *S. S. Yamashiro Maru*).
Russia: Opposite Black Sea Ports, Aug. 14, present: Samara, government district, to Aug. 5, 50 cases, 10 deaths; Samara, 33 cases, 10 deaths; Stavropol, 3 cases.

YELLOW FEVER.

Brazil: Rio de Janeiro, July 29-Aug. 4, 1 case, 1 death.
Cuba: Cienfuegos, Aug. 30-Sept. 5, 4 cases, 2 deaths, from Aug. 3 to Sept. 5, 34 cases, 8 deaths.
Mexico: Manzanillo, Aug. 17, 1 case (on *S. S. San Juan*); Veracruz, Sept. 5, 1 case.

PLAGUE—UNITED STATES.

California: Berkeley, Sept. 1, 1 case, 1 death; San Francisco, Sept. 10, 3 cases, 1 death; total for San Francisco since the new outbreak, 21 cases and 9 deaths, the case and death in Berkeley was originally reported with the San Francisco cases plague, foreign.

PLAGUE—FOREIGN.

Australia: Brisbane, July 7-25, 3 cases, 3 deaths.
Brazil: Pahia, July 27-Aug. 10, 16 cases, 2 deaths; Rio de Janeiro, July 29-Aug. 4, 5 cases, 1 death.
China: Amoy, July 26, epidemic.
India: Bombay, July 24-Aug. 6, 24 deaths.

Medical Education and State Boards of Registration

COMING EXAMINATIONS.

OKLAHOMA Territorial Examining Board, Guthrie, September 24-25. Secretary, Dr. J. W. Baker, Enid.

COLORADO State Board of Medical Examiners, 1723 Tremont St., Denver, October 1. Secretary, Dr. S. D. Van Meter, Denver.

IDAHO State Board of Medical Examiners, Capitol Building, Boise, October 1. Secretary, Dr. W. F. Howard, Pocatello.

MINNESOTA State Board of Medical Examiners, Old Capitol, St. Paul, October 1. Secretary, Dr. W. S. Fullerton, St. Paul.

MONTANA Board of Medical Examiners, The Capitol, Helena, October 1. Secretary, Dr. W. C. Riddell, Helena.

NORTH DAKOTA State Board of Medical Examiners, Grand Forks, October 1-3. Secretary, Dr. H. M. Wheeler, Grand Forks.

NEW YORK State Board of Medical Examiners, Albany, October 1-4. Chief of Examining Division, Charles F. Wheelock, Albany.

INDIAN TERRITORY, Western District Board of Medical Examiners, Muskogee, October 7. Secretary, Dr. M. F. Williams, Muskogee.

UTAH State Board of Medical Examiners, Salt Lake City, October 7-8. Secretary, Dr. R. W. Fisher, Salt Lake City.

ARKANSAS State Board of Medical Examiners, State Capitol Building, Little Rock, October 8. Secretary, Dr. F. T. Murphy, Brinkley.

ARKANSAS Homeopathic Board of Medical Examiners, Little Rock, October 8. Secretary, Dr. V. H. Hallman, Hot Springs.

GEORGIA Board of Medical Examiners (Regular), Capitol Building, Atlanta, October 8. Secretary, Dr. E. R. Anthony, Griffin.

MICHIGAN State Board of Registration in Medicine, Lansing, October 8. Secretary, Dr. B. D. Harison, 205 Whitney Building, Detroit.

MISSISSIPPI State Board of Health, Jackson, October 8. Secretary, Dr. J. F. Hunter, Jackson.

WYOMING State Board of Medical Examiners, Laramie, October 9. Secretary, Dr. S. B. Miller, Laramie.

RHODE ISLAND State Board of Health, Room 313, State House, Providence, October 10-11. Secretary, Dr. Gardner T. Swarts, Providence.

DISTRICT OF COLUMBIA Board of Medical Supervisors, Law School of Georgetown University, Washington, October 10-14. Secretary, Dr. Geo. C. Ober, Washington.

GEORGIA Board of Eclectic Medical Examiners, Senate Chamber, Atlanta, about October 15. Secretary, Dr. C. H. Field, Marietta.

LOUISIANA State Board of Medical Examiners, Tulane University Medical Department, October 15-16. Secretary, Dr. F. A. LaRue, 211 Camp St., New Orleans.

NEW JERSEY State Board of Medical Examiners, State House, Trenton, October 15-16. Secretary, Dr. J. W. Bennett, Long Branch.

TEXAS State Medical Examining Board, Fort Worth, October 21. Secretary, Dr. G. B. Foscue, Waco.

INDIANA Board of Medical Registration and Examination, Indianapolis, October 22-24. Secretary, Dr. W. T. Gott, Crawfordsville.

ILLINOIS State Board of Health, Great Northern Hotel, Chicago, October 23-25. Secretary, Dr. J. A. Egan, Springfield.

Tennessee May Report.—Dr. T. J. Happel, secretary of the Tennessee State Board of Medical Examiners, reports the written examinations held at Memphis, Nashville and Knoxville, May 1, 1907. The number of subjects examined in was 8; total number of questions asked, 64; percentage required to pass, 75. The total number of candidates examined was 273, of whom 133 passed, including 11 non-graduates, and 140 failed, including 129 non-graduates. The following colleges were represented:

College.	PASSED. Year Grad.	Per Cent.
George Washington University	(1905) 94.2; (1906)	86.5
University of Louisville	(1896) 76.1; (1905) 88.6; (1906) 75; (1907) 81.5, 93.7.	
Hospital Coll. of Med., Louisville	(1896)	75
Kentucky University	(1907)	87.3
American Med. Miss. Coll.	(1900)	76.7
College of P. and S., Baltimore	(1889)	95
Johns Hopkins University	(1899)	87.2
Maryland Med. Coll.	(1900)	76
Boston University	(1888)	88.5
Eclectic Med. Institute, Cincinnati	(1898)	75
Western Pennsylvania Med. Coll.	(1900)	80
University of Pennsylvania	(1897) 90.5; (1906) 92; (1907) 84.6	
College of P. and S., New York	(1904)	83
Memphis Hosp. Med. Coll.	(1904) 84; (1905) 77; (1906) 79; (1907) 78.2, 76, 78.2, 78.2, 78.5, 90.	
College of P. and S., Memphis	(1907) 78.2, 84, 82, 97.	
Vanderbilt University	(1904) 75.3; (1902) 93.1; (1903) 89; (1906) 91.2; (1907) 80.5, 87, 87, 87, 88, 91.2, 91.5, 92.3, 92.3, 93, 93, 93, 94.2, 95, 95.1.	
Meharry Med. Coll.	(1904) 85.5; (1906) 78.2, 89; (1907) 77.5, 77.5, 78.3, 80, 82.3, 84.5, 85.7, 86.	
Tennessee Med. Coll.	(1903) 75; (1906) 93.5; (1907) 75, 75, 78, 78, 80, 83.1, 84.2, 84.2, 86.1, 86.5.	
University of Nashville	(1905) 87.5; (1906) 75.6, 80, 80; (1907) 75, 75.5, 76.1, 77, 77.6, 81, 87.	
Chattanooga Med. Coll.	(1904) 75.5; (1906) 77.7; (1907) 75, 76.5, 81.1, 85.	
University of the South	(1906) 75, 86.2	
University of Tennessee	(1903) 79, 88.7; (1907) 75, 78, 78.1, 79, 79.6, 80, 83.4, 84.7, 85.5, 85.7, 86.3, 86.6, 87.1, 87.3, 88.7, 89, 89.2, 92.1, 93.5, 93.7, 95.5, 95.5.	
University of Virginia	(1903)	87.5
Queen's University, Ontario	(1906)	80

College.	FAILED.	
Kentucky University	(1904)	59.6
Meharry Med. Coll.	(1905) 60; (1906) 59.5,	59.8
Knoxville Med. Coll.	(1905)	48.5
Tennessee Med. Coll.	(1906) 42; (1907) 50,	52, 56
Chattanooga Med. Coll.	(1907)	21, 45

Marriages

FRANK M. BURNS, M.D., to Miss Emma Dreihs, both of Cincinnati, August 28.

OTTO BALENSIEFFER, M.D., Peru, Ill., to Miss Helen Wilkins of Chicago, August 31.

OLIVER J. ROSKOTEN, M.D., to Miss Olga Beseman, both of Peoria, Ill., recently.

GRACE SCHOLZ, M.D., and J. LeRoy Mountjoy, both of Columbia, Mo., September 3.

HOYT E. DEARHOLT, M.D., to Miss Edith Tweeden, both of Milwaukee, August 31.

ROBERT WORTH ROBB, M.D., Blanchard, Iowa, to Miss Porter of Albia, Iowa, August 29.

CHARLES STEPHAN, M.D., to Miss Wilda Lower, both of New Bedford, Ohio, September 1.

EDWIN ALAN HANNUM, M.D., to Miss Ollie Lilian Martin, both of Cleveland, September 4.

CARL F. FECHHEIMER, M.D., Detroit, Mich., to Miss Laura Offman of Cincinnati, September 3.

Deaths

James Carroll, M.D., Major and Surgeon U. S. A., one of the commission assigned to study the cause and prevention of yellow fever, and the third of the four of that commission to die, died after a long illness, in Washington, September 16. He was born in Woolwich, Eng., June 5, 1854; received his early education in Albion House Academy; enlisted in the U. S.

Army in January, 1874, and served as private, corporal and sergeant in Company E, First Infantry, and as private, sergeant and first sergeant in Company C, Seventh Infantry, from that time until September, 1883, when he was given his warrant as hospital steward, in which capacity he served until May 21, 1898. During the latter part of this time he was studying medicine and showed unusual adaptability to research work, and for that reason was on duty in the Army Medical Museum, Washington. He pursued his studies in the Columbian University and was graduated from the Medical Department of the University of Maryland, Baltimore, in 1891. He took a postgraduate course in pathology in Johns Hopkins Hospital the same year, and in the next year a postgraduate course in bacteriology.

After graduation he was appointed acting assistant surgeon in the United States Army and in 1897 was associated with the late Major Walter Reed, U. S. Army, and the late Dr. James W. Lazear, U. S. Army, and Dr. A. Agramonte, as a commission to study the yellow fever situation with especial reference to the *Bacillus xanarelli* in the United States and Cuba. As the commission, after study of the situation, came to the decision that the disease was spread by the bite of infected mosquitoes, Dr. Carroll volunteered to be bitten by a mosquito that had previously been caused to bite three yellow fever patients. Within four days he was taken ill and suffered a severe attack of the disease, the first case of experimental yellow fever on record.

On Oct. 27, 1899, Dr. Carroll, although past the age limit for admission to the Medical Department of the Army, was commissioned first lieutenant and assistant surgeon, and on May 2, 1907, largely through the efforts of the National Committee on Medical Legislation of the American Medical Association, Congress ordered that he be commissioned as major and surgeon in the Army. He still retained his position as curator of the Army Medical Museum. On May 27, 1907, Dr. Carroll had conferred on him the degree of doctor of laws by the University of Nebraska, in appreciation of his scientific and humanitarian achievements.

Dr. Carroll was a member of the American Medical Association; the Association of Military Surgeons of the United States, Society of American Bacteriologists, and its vice-president in 1902; Clinico-Pathological Society of Washington; Washington Academy of Sciences, and of many other national and semi-national societies. He was instructor in bacteriology, pathology and clinical microscopy in the Army Medical School; professor of bacteriology and pathology in the George Washington University, and pathologist to the Columbian Hospital, Washington. He was an earnest research worker and a frequent contributor to medical journals and to the proceedings of scientific societies.

Lester S. Hill, M.D. New York University Medical College, New York, 1872; a member of the Rhode Island State and Providence County medical societies; assistant surgeon general of Rhode Island, and during the Spanish-American War major and surgeon of the First Infantry, R. I. N. G.; a veteran of the Civil War; a member of the school committee of Providence for 25 years, and a member of the General Assembly for two years; died suddenly at his home in Providence, September 9, from heart disease, hastened by shock due to a street car accident two weeks before, aged 63.

John Norman Dixon, M.D. Cincinnati College of Medicine and Surgery, 1878; a member of the American Medical Association; once president of the Sangamon County Medical Society; one of the founders of and surgeon to the Springfield (Ill.) Hospital, and consulting surgeon to the Illinois Central Railroad at that point; died September 8, from disease of the kidney, after an illness of three weeks, at a private sanitarium in St. Louis, aged 52.

Alexander Warner Shepard, M.D. Long Island College Hospital, Brooklyn, N. Y., 1866; a member of the American Medical Association; for a long time county physician of Kings County, and conspicuous in medical and political affairs in Brooklyn for many years, died at his summer home in Fort Hamilton, September 8, from heart disease, aged 75.

Samuel Bane, M.D. Northwestern University Medical School, Chicago, 1897; a member of the American Medical Association, and one of the most promising young practitioners of Peoria, Ill.; died at his home in that city, September 6, from intestinal paralysis, following typhoid fever, after an illness of two weeks, aged 36.

Daniel H. Kelley, M.D. University of Vermont, College of Medicine, Burlington, 1881; a member of the American Medical Association; one of the best known practitioners of Penobscot, Maine, and formerly a practitioner of Mattawamkeag; died at his home in Oldtown, from cancer, August 28, after a long illness, aged 52.

Timothy Willis Miles, M.D. Eclectic Medical Institute, Cincinnati, 1875; a member of the State Board of Medical Examiners of Colorado, and of the national and state eclectic medical societies; died at his home in Denver, Colo., September 8, from typhoid fever, after an illness of two weeks, aged 58.

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James Curry Shook, M.D. Jefferson Medical College, Philadelphia, 1891; of Windber, Pa.; fell from a freight train while on his way from South Fork, September 7, and sustained injuries from which he died at the Memorial Hospital, Johnstown, a few hours later, aged about 40.

John H. Boyer, M.D. Medical Department of the Tulane University of Louisiana, New Orleans, 1895; of Moreauville, La.; a member of the American Medical Association; surgeon for the Avoyelles division of the Texas & Pacific Railroad; died in Philadelphia, September 2, aged 33.

Joseph Alexander Winkler, M.D. New York University Medical College, New York City, 1854; a member of the Massachusetts and Suffolk County medical societies; one of the oldest practitioners of Jamaica Plain, Boston; died at his home in that place, August 30, aged 77.

Fred Jason Beckwith, M.D. Medical School of Harvard University, Boston, 1882; health officer of New London, Conn., and for a time marine physician of the port; died suddenly, from heart disease, September 2, while making a professional call in Waterford, aged 52.

Perry Rubel Crosswait, M.D. Miami Medical College, Cincinnati, 1877; formerly of Des Moines, Iowa; a veteran of the Civil War; died at a hospital in Tacoma, Wash., September 5, as the result of injuries received in alighting from a street car the day before, aged 72.

Jay Warren Shelley, M.D. Jefferson Medical College, Philadelphia, 1906; of Fort Royal, Pa.; a member of the Juniata Valley Medical Society, and first resident physician of the Pottsville (Pa.) Hospital; died at his home in Fort Royal, August 15, aged 25.

Kenneth Nicol Mackenzie, M.D. University of Toronto, Faculty of Medicine, 1907; interne in the St. Luke's Hospital, Ottawa, Ont.; died from pneumonia following diphtheria, in that institution, September 7, after a short illness, aged 23.

William Thomas G. Whiteford, M.D. Baltimore (Md.) Medical College, 1904; a practitioner of Parkville, Baltimore; died in the Baltimore City Hospital, September 8, a week after an operation for appendicitis, aged 23.

Aquilla Talbott (Years of Practice, Ky., 1803); a Confederate veteran, and since 1870 a practitioner of Lexington, Ky.; died at his home in that city, September 3, after a short illness, from acute nephritis, aged 69.

Walter Spiva, M.D. Kentucky School of Medicine, Louisville, 1905; physician of the State Penitentiary Farm, Bethelen, Miss.; died from typhoid fever, September 7, after an illness of two weeks, aged 48.

Harvey L. Jewell, M.D. University of Vermont, College of Medicine, Burlington, 1877; a veteran of the Civil War; died suddenly at his home in Bangor, Maine, September 6, from cerebral hemorrhage.

J. F. Richards, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1903; license, Mississippi, 1891; died at his home near Oxford, Miss., from congestion of the brain, September 8.

Henry A. Fritcher, M.D. Rush Medical College, Chicago, 1875; formerly of Buffalo and North Tonawanda, N. Y.; died in the Masonic Home, Utica, N. Y., September 2, aged 64.

George Douglas Soule, M.D. Eclectic Medical College of New York City, 1889; formerly of Clinton, Iowa; died at Camanche, Iowa, September 9, after a prolonged illness, aged 47.

Joseph Taylor Surbaugh, M.D. Missouri Medical College, St. Louis, 1874; was found dead in his office in Grimes, Cal., September 5, from fatty degeneration of the heart.

Harrison Lilly, M.D. Cleveland Homeopathic Medical College, 1878; of Butler, Ind.; died suddenly at the home of his sister in Cleveland, Ohio, September 4, aged 60.

George Long, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1885; formerly of Springfield, Ill.; died at his home in Watson, Mo., July 11, aged 60.

Charles Herman Kiehl, M.D. Detroit College of Medicine, 1905; died at his home in Albuquerque, N. M., recently, aged 26.

Frank M. Gross, M.D. Eclectic Medical Institution, Cincinnati, 1881; died at his home in Mechanicsburg, Pa., September 7.

Caspar Schulte, M.D. Frederick William University, Berlin, Prussia, 1854; died at his home in Detroit, June 29, aged 79.

John P. H. Gray (License, Mo., 1883); died suddenly at his home in California, Mo., September 2, aged 86.

Society Proceedings

COMING MEETINGS.

Medical Society of the State of Pennsylvania, Reading, Sept. 23-26.
Southern Medical Association, Birmingham, Ala., Sept. 24-26.
Amer. Acad. of Ophthal. and Oto-Laryng., Louisville, Sept. 26-28.
American Public Health Assn., Atlantic City, Sept. 30-Oct. 4.
Medical Assn. of District of Columbia, Washington, Oct. 1.
American Roentgen Ray Society, Cincinnati, Oct. 2-4.
Idaho State Medical Society, Boise, Oct. 3-4.
Delaware State Medical Society, Wilmington, Oct. 8.
Nevada State Medical Society, Reno, Oct. 8-9.
Mississippi Valley Medical Association, Columbus, O., Oct. 8-10.
Medical Assn. of the Southwest, Hot Springs, Ark., Oct. 8-10.
Vermont State Medical Society, St. Johnsbury, Oct. 10-11.
Kentucky State Medical Association, Louisville, Oct. 15-17.
Assn. of Military Surgeons of the U. S., Norfolk, Va., Oct. 15-18.
American Association of Railway Surgeons, Chicago, Oct. 16-18.

INTERNATIONAL DERMATOLOGICAL CONGRESS.

Sixth Meeting, held in New York City, Sept. 9-14, 1907.

The President, DR. JAMES C. WHITE, Boston, in the Chair.

FIRST DAY, SEPT. 9.

The meeting was called to order by the president. After the secretary-general, Dr. John A. Fordyce, New York, had made his report, addresses of welcome were delivered.

The New Era in Naval Medical Affairs.

SURGEON-GENERAL P. M. RIXEY, U. S. Navy, extended a hearty welcome in the name of President Roosevelt and all that he represented, and emphasized the universal interest that the President takes in all matters pertaining to the welfare of the human race. There has been none who has been more interested in the progress of the medical profession than Theodore Roosevelt. Dr. Rixey spoke feelingly of the time, five years ago, when he came to the head of the Bureau of Medicine and Surgery of the Navy, when it was sorely in need of all that great advance which was being made. At that time there was a corps of medical officers one-half short as to numbers, no opportunity for advancement in their profession, and ground down to routine work. Ships and hospitals were out of date and wanting in modern facilities. To-day they can show a working corps with advantages in professional and even research that is the envy of their civil brethren. A graduate medical school and a new medical school hospital at Washington, a number of *new* naval hospitals at home and abroad, with old ones being modernized, with battleships and cruisers having space assigned to the sick and injured, etc., all have been accomplished because of the interest of President Roosevelt. In the naval medical work the proportion of dermatologic diseases to all others is about 13 per cent. More and more attention is given to skin troubles in the graduate school at Washington, and many of the most interesting reports to-day are on this subject, especially in connection with tropical medicine.

Affiliation Between Universities and Medical Schools.

DR. IRA REMSEN, president of Johns Hopkins University, expressed welcome to the congress in behalf of the universities, the training ground of research. Success in research depends on the character of the university, and this is recognized in this country now, there being a well-defined university movement among the medical schools here. Within twenty-five years this university movement has acquired a great momentum. Universities have taken possession of the medical schools and, to the same extent, the medical schools are trying to get under the cover of the universities. So, at the present time, the prominent medical schools have gathered with the prominent universities. If this movement keeps up there does not seem to be enough universities to go around. Connection between the universities and medical schools is desired because the atmosphere of research is the best atmosphere for teaching; this is the fundamental connection with the university movement. This is recognized in most countries and is coming to be recognized more and more. Another reason is that many medical schools were established for profit; but that day has gone. To conduct a medical school now is an expensive operation. The medical schools and the medical department of universities are now on the same footing, as in other kinds of higher education. A medical school, as such, can not hope for any endowment; whereas universities can.

Welcome from the Medical Profession of the United States.

DR. JOSEPH D. BRYANT, president of the American Medical Association, extended a greeting and fraternal welcome in behalf of the American Medical Association, and the medical profession of the country.

Address by the President of the Congress.

DR. JAMES C. WHITE, Boston, after welcoming the congress, offered a sketch of some of the changes that have taken place in the study and practice of dermatology in the last half century, and then noted the changes which the same period has brought to pass in their department everywhere. He uttered a word of caution regarding the unnecessary division of diseases and multiplication of titles. They tend to magnify the significance of slight clinical variations, to attribute to them specific importance, and to emphasize their pseudo-independence by bestowing on them titles of individuality. Well-established landmarks should not be changed except for reasons founded on demonstrable differences in anatomy and etiology. He believed in the creation of a standing committee of the association to consider the subject in a broad way, on which should be representatives of all our great nations, unprejudiced by past systems of schools or individuals. Among the important questions for them to act on are: 1. What are the influences of race, geographical conditions, climate, national customs, etc., on the evolution and type of diseases of the skin? 2. What variations does emigration induce in dermatoses? 3. What cutaneous affections should national governments regard as infective, and seek to control by restriction of immigration, by enforced insulation, and similar measures? 4. How far is it possible and incumbent on national governments to control the continuance of hereditary dermatoses by restriction on marriage laws? 5. Should not the influence of this body be directed to induce governments to aid in the support of researches bearing on sanitary questions of national importance?

Other affections, of which some see only an occasional immigrant example, should be studied in their tropical homes by experienced dermatologists. A large fund should be raised, and the aid of the respective governments should be solicited in behalf of the plan. An international committee, composed partly of members of this body, partly of well-known authorities on tropical diseases in all parts of the world, might be established to raise the means and to superintend such investigation. He suggested that a committee be appointed to consider the subject and report before adjournment. Looking backward over his fifty years of study and practice in affections of the skin, he said that there were three eras of advance within his experience: 1. The knowledge founded on a more careful study of the external manifestations and unbiased interpretations of clinical phenomena. 2. A deeper knowledge of the minute anatomy of tissue changes in and a more scientific grouping of dermatoses. 3. The recognition of the real nature and cause of visible lesions and underlying tissue changes and the essence of disease—a true system of pathology—the promise of attainment of the power of prevention, of establishing immunity, of founding a broader system of rational therapeutics.

Dr. White then considered the results of our knowledge of modern cutaneous pathology on practical therapeutics. We are well-nigh as helpless in the control of our gravest, as well as of our most common, dermatoses, as we were half a century ago, and that our most successful therapeutics measured are as empirical in nature as they have ever been. So far researches in the portentous realms of immunization have not brought forth such practical results as did the shrewd, unaided observations of that old English country doctor, Jenner. He asked who can confidently predict the curative results of a prescription in any individual case of eczema, or psoriasis, or lichen, or acne, or the other common dermatoses which fill daily clinics. Have we any power over the pigment-producing layer of the cuticle? Can the members of this congress control the disordered actions of the sweat glands? Have they a surer power over the deeper and graver forms of cutaneous disease than the surgeon's hand of fifty years ago? Dr. White disclaimed being a pessimist in therapeutics; still he believed in an honest recognition of present limitations as one of the steps toward securing greater power of control in the future.

(*To be continued.*)

OHIO STATE MEDICAL ASSOCIATION.

Annual Meeting, held at Cedar Point, Aug. 28-30, 1907.

(*Continued from page 961.*)

The Improvement of the Medical Profession.

In his presidential address, Dr. B. R. M'Clellan, Xenia, made an earnest plea for that reorganization which stands for a united profession free from petty jealousies, envy and discord. He said that during the past year he had visited many of the county societies of the state and that, without exception, wherever men were found who really graced the profession of medicine, there was found a good medical society and men living in harmony with each other; on the other hand, where many men were found who disgraced their calling, whose offices were dingy and untidy and devoid of modern equipment, where the men themselves, unshaven and in soiled linen, spent much time in scandalizing each other, there organization languished and harmony and good fellowship were untasted and unknown fruits. As a rule, the fault, he asserted, lies at the door of an incompetent secretary, which office Dr. M'Clellan considers one of the utmost importance. Dr. M'Clellan commended the work of the Ohio League for the suppression of Fraudulent Advertising and of the *Ohio State Medical Journal*, and expressed grateful appreciation of the work of the American Medical Association in bringing about a course of instruction in medical economics in the medical schools of the land. He advocated the establishment of systematic postgraduate courses throughout the state, in which well-chosen instructors should go from district to district, giving a course of instruction on topics of mutual interest to the medical profession and the people, especially on the great questions of sanitation and prophylaxis, as well as on those questions that involve moral issues.

Surgery of the Stomach Based on One Hundred and Four Personal Cases.

DR. GEORGE CRILE, Cleveland, said, in part, that the advances made in gastric surgery have been mainly along two lines: the improvement in technic and the better understanding of surgical indications. If any great improvement is to be reached in cases of gastric carcinoma it will either be by the discovery of some new clinical methods, whereby the case may be early diagnosed, or because a larger number of suspected carcinomas will be subjected to exploratory incision. Surgical treatment either has failed or has made a very poor showing in simple dilatation of the stomach without obstruction, especially in neurasthenic subjects, in splanchnoptosis, in acute gastric ulcer without obstruction of the pylorus and in cancer of the stomach without obstruction of the pylorus and yet too far advanced for excision. Surgery, he stated, is less effective than other methods in hemorrhage from ulcers. In non-malignant obstruction of the pylorus surgery may give prompt and lasting relief. In gastric carcinoma with obstruction, simple gastroenterostomy is the best treatment. In cancer of the stomach in its resection stage, complete excision increases the expectancy of life and comfort of living and offers a definite percentage of chances of cure. The surgeon and internist should agree that the joint management of such cases will bring out the most effective methods from both and the greatest number of cures.

The Treatment of Gastric Hypoacidities.

DR. M. J. LICHTY, Cleveland, reviewed the literature on the subject and cited cases and treatment in six patients of his own. He said that the patients do not need much treatment for the stomach alone, neither can they be well treated without recognition of the many associated pathologic conditions so often noted. The treatment of this condition with hydro-

chloric acid has been disappointing and unsatisfactory in his hands. Of the greatest need and urgency is the treatment to improve the patient's nutrition. This requires good food in plenty and properly prepared; proper exercise, a moderate amount of rest, some medicines and some wholesome advice, especially about the details of the diet. In neurasthenic patients sometimes prolonged and complete rest in bed, with the care of an experienced and tactful nurse, is necessary to effect a cure. He often gives bitter tonics, such as nux vomica, condurango, small doses of quinin, gentian and quassia, occasionally combined with small doses of hydrochloric acid. In mild neurasthenia the bromids are occasionally most effectual. Electricity is perhaps valuable along the line of suggestive treatment. Many of these patients are unwilling to make any sacrifices whatever and occasionally one fails to accomplish anything even after the most pain-taking effort and in the best surroundings.

The following papers were read and discussed, in connection with the foregoing: Clinical Notes on the Acute Dilatation of the Stomach and Arteriomesenteric Ileus, Dr. W. B. Laffer, Cleveland, and A Clinical Study of 500 Gastric Cases, by Dr. J. D. Dunham, Columbus.

DISCUSSION.

DR. N. ROSEWATER, Cleveland, said that the internist should take care of these cases from the time of the operation. The surgeon has his own work to do and is less able to take care of the questions of diet than the internist. Achylia gastrica, in his experience, is often accompanied by intense pain, simulating gallstones.

DR. H. T. SUTTON, Zanesville, said that no doubt the profession has been misled in the past by flattering reports of cases in which the patients that would have been better left unoperated on. He related a recent case of his own which he considered too far advanced for operation; he sent the patient, a man, home, expecting him to starve to death in a few weeks, but he entirely recovered without treatment. In Dr. Sutton's opinion, the patients who are overlooked by the surgeon are the fortunate ones.

DR. SAWYER, Cleveland, advocated the passage of the stomach tube, even in seemingly moribund conditions. He is sure these patients do not collapse from the passage of the tube, and commonly it is a great relief. To speak of the "greenish material" as bile is a confounding and counfounded mistake, he said, as it is rare to find bile pigment in these cases. Extreme thirst is a striking factor; it is relieved by washing the stomach with a strong alkaline solution, made from common baking soda. He has seen patients with pyloric stenosis and enormous dilatation greatly relieved and made comfortable by the use of oil. If after four weeks of careful test meals, rest in bed, etc., the patient is not better, he should have the benefit of an operation. The care of gastric ulcer is most important, because it is the most immediate predisposing cause of cancer of the stomach. Dr. Sawyer believes in excision and that operation should be more frequent.

DR. R. B. HALL, Cincinnati, said that Dr. Crile's paper is a compilation of cold, hard facts for which the association should feel grateful. The greatest benefit to the patient in postoperative work is careful attention to the diet. Much has been done in surgery, while nothing, he said, is gained by internal treatment in cancer of the stomach. The operation should be rather encouraged. He thinks that in the future we should be able to report better results.

DR. G. W. CRILE said that it is greatly to be desired that patients be seen earlier if the improvement in results is to be reached. He emphasized the great safety in which surgery of the stomach can be done, the mortality rate not exceeding from 0.5 to 2 per cent. in simple cases, the percentage of course rising with the morbidity of the given case.

DR. M. J. LICHTY laid emphasis on the value of olive oil, patients being willing to take it as food. He called attention to the frequency of ulcers in hyperacidity, which is contrary to the text-books and most authors. The low percentage of hypochlorhydrias given is contrary to his experience.

DR. J. D. DUNHAM said he has not had the fortunate results from oil spoken of by Dr. Sawyer. Most physicians regard the introduction of the stomach tube as a formidable procedure, but it really requires little skill, and in his experience the use of a local anesthetic is not necessary, rather increasing the discomfort of the patient than otherwise.

The Pathology of Drinking Water.

DR. R. C. LONGFELLOW, Toledo, said, in part, that potable water becomes pathologic from the living bacterial content, not the organic matter, decaying or dead. Combined chemic, microscopic and bacteriologic examinations are necessary to correct interpretation as to findings. Chemical analysis may show the water to be of high grade, yet bacteriologic investigation may reveal that same water to be alive with pathologic bacteria. Again, chemical examination may give on distillation free ammonia and nitrites, which indicates sewage contamination and decaying animal matter. The source of any water supply is an important factor in investigation, as analysis and biologic examination only disclose the present condition, but can give no information as to the liability of past or future contamination. Some non-pathologic bacteria so closely resemble others of known pathology that it requires a careful search and differentiation to identify one from the other. The pathologic group found in domestic water is the intestinal group, and these were separately considered by Dr. Longfellow. He uses ox bile combined with different carbohydrates, acid reducing agents, for the detection of *B. coli communis* in suspected water. In reply to a question, he stated that he has never found a filter for domestic purposes that does not allow all bacteria to go through, because what will admit the passage of water will admit the passage of bacteria, and becomes a vile collection of the latter.

Spinal Curvature Arising from Improper Seating of School Children, and Its Prevention.

DR. WALTER G. STERN, Cleveland, said that scoliosis is usually a static deformity due to faulty position and weakened muscles. Statistics show an alarming percentage of school children with this deformity. The most cursory survey of the position of the majority of school children has convinced most workers in this field that the habitual position forced on the pupils of our schools by faulty seats and by slant writing is the greatest cause of scoliosis. It should be the function of physicians as educational advisors to determine what are the proper seats for the pupils, what is the proper position in writing, and to instruct the teacher to correct these as far as possible. Pupils should be graded and seated according to size, eyesight and hearing, not by their standing in classes. The aim should be to have a desk in which the child will naturally assume the correct position. Vertical writing in a good seat is the ideal. Banking and business interests advocate the slant writing, as it conduces to more speed and individuality.

DISCUSSION.

DR. M. FRIEDRICH, Cleveland, said that the law compels parents to send their children to school, and the parents and the children have certain inalienable rights which they can claim, and it is certainly the right of the parents and the children that they be not placed in conditions in which they may receive physical harm. Boards of health in Ohio are forced by law to supervise school hygiene, but it is hard in any city to get sufficient men to do this work. The school teachers know absolutely nothing about hygiene. They allow children to strain the eyes in reading and writing and let them take any position they want. A course of school hygiene should be incorporated in the curriculum of normal schools. In Germany there is better regulation, for they need strong men for soldiers in the army. There the schools were found to be the sources of degeneration. The need for strong men is just as important in this country, and it is high time for medical men to interfere in the matters of hygiene of children in our schools.

DR. HELD took exception to the statement that teachers know nothing about school hygiene. Twenty years ago he attended a society of teachers, and hygiene was a frequent subject of dis-

cussion. The teachers, he declared, are an intelligent body, and do a great deal to improve conditions, and are often criticised when the conditions do not bear out the accusations.

DR. J. A. WEITZ, Montpelier, thinks that this disagreement is due simply to the change in fads—the change of ideas and attention from one decade to another. When he went to school the order to "sit straight" was constantly before the pupils. Writing has fallen somewhat into disuse, the stenographer and typewriter, the telegraph and telephone have interposed. Last winter he saw the conditions spoken of by Dr. Stern. Something else has crowded this out of their minds. The pendulum swings one way and the other.

DR. ANDERS said that the fault in sitting might be remedied if the chair were placed to the left and the pupil were not directly back of the desk in the middle. In country schools there are often different-sized desks, but there will often be a small desk with a high seat behind it, increasing in size to the back of the room. The desk will be suited to the pupil, but the seat be too high. It would be better to have an entire row of small desks on either side.

DR. W. G. STERN said these things could be better regulated if physicians would take part in politics. In country schools the different grades are all in one room. In city schools it has been presupposed in furnishing that the children in the fifth grade, for example, are all of one size, and therefore the desks are one size. The best desk is that in which the desk and seat can be adjusted separately. In a room of 12 rows 8 should be of the average size, with two smaller ones on either side.

A Statistical Consideration of Six Hundred General Anesthesias.

DR. ROBERT CAROTHERS, Cincinnati, conceived the idea a year ago of keeping a statistical record of all cases in the Good Samaritan Hospital, Cincinnati. A period of ten months and 600 cases were covered in his tables, which embraced

Chloroform	71
Gas ether	103
Closed cone	168
Drop ether	259

DISCUSSION.

DR. M. T. METZENBAUM, Cleveland, said that ether by the drop method is the anesthetic of election in America. It takes but a short time for the patient to become anesthetized, the amount consumed is less, and he frequently will awaken before leaving the operating room. The postanesthetic vomiting is less than in the cone method and frequently no greater than with chloroform. Throughout the country a specialty is developing, and the anesthetist will come to be recognized as second only to the surgeon in importance. Contrary to the usual opinion, ether can be given with great safety to children. He operates on many, frequently on those but a few days old, for orthopedic measures, and unless the weather is bad, he uses ether by the drop method, and pneumonia is not more frequent with ether than with chloroform.

DR. HOWSE asked if Dr. Carothers had tried the method of administering oxygen as soon as surgical anesthesia ensues, and with what result.

DR. HARRISON said that he had found vomiting much less and recovery quicker in the use of the drop method than with the cone, while ether pneumonia is rare.

DR. KRAMER, Cincinnati, called attention to the use of amyl nitrite in cases of cardiac paralysis or shock. Animal experimentation shows that when ether is drawn into the circulation death is always by cardiac failure, but by the use of amyl nitrite a dose often lethal to the animal proves not to be so. It has been said that it acts in the same way as ether in lessening the blood pressure, and for that reason it has been cast aside, but it is of benefit, Dr. Kramer asserted, in cases of ether heart poisoning.

DR. J. J. REYNOLDS, Defiance, said that the use of the stomach tube at the close of an operation seems to do away with the postoperative vomiting.

(To be continued.)

MEDICAL SOCIETY OF THE MISSOURI VALLEY.

Annual Meeting, held in Council Bluffs, Iowa, Sept. 5-6, 1907.

The officers elected were given last week, page 950.

The society adopted a resolution endorsing the proposed reorganization of the medical department of the United States Army, and another advocating the establishment of a department of health under the direction of a medical man, a member of the President's cabinet.

Alkaloids vs. Galenical Preparations.

DR. A. L. MUIRHEAD, Omaha, said that while pure alkaloids or other active principles are necessary for the correct pharmacologic study of drugs, it does not necessarily follow that they are always the most useful form for obtaining therapeutic results, and to hold that active principles separated from their natural plant combinations are always preferable to galenical preparations, does not harmonize with pharmacologic facts. Dr. Muirhead claimed that some of the so-called active principles on the market are not definite chemical substances, but varying mixtures of a number of bodies, in reality, purified solid extracts, and that even when definite, stable active principles are obtainable, they are not always the most useful therapeutic agents.

Diagnosis of Presentation and Position in Obstetrics.

DR. C. W. POLLARD, Omaha, claimed that general practitioners pay too little attention to careful diagnosis of the position of the child either in the preliminary examination or in the examination made just prior to delivery.

Orthopedic Surgery in General Practice.

DR. J. W. COKENOWER, Des Moines, Iowa, discussed deformities in general, and especially those that shorten life and destroy the natural contour of the body. He claimed that all deformities of the spine can be relieved, if treatment is begun early, and that in the treatment of these deformities the medicinal and mechanical treatment should be augmented by hygiene, exercise, gymnastics and all other properly guarded means of developing the body and improving the general health.

Are We of Necessity Largely Symptomatologists?

DR. C. B. HARDIN, Kansas City, Mo., plead for more care in diagnosticating disease so that the treatment may be based on a full comprehension of the disease to be treated.

General Pruritus.

DR. A. SCHALEK, Omaha, discussed the clinical history and treatment of this affection, which he said is never a trivial one, because it threatens to affect the patient's general health of mind and body, and as much care and study are required in its treatment as in the treatment of other apparently more serious diseases.

Sane Type of Insanity.

DR. S. G. BURNETT, Kansas City, Mo., called attention to that large class of cases in which the patient is first seen by the general practitioner, but because of the patient's clearness of mind and the accuracy of statements made, the diagnosis is frequently unsuspected and not made until much valuable time has been lost before the patient is placed under treatment.

Habitual Constipation.

DR. J. C. WATERMAN, Council Bluffs, Iowa, described the treatment of habitual constipation in general, being that usually adopted in such cases. He urged that the cause of the constipation be sought for before treatment is begun, because in too many cases a routine treatment is employed and proves ineffectual when with proper attention a speedy cure might be effected.

Other Papers Read.

Many other interesting papers were read. Among these were the following: "Educational Hygiene," by Dr. S. R. Towne, Omaha; "Tonsillectomy vs. Tonsillotomy," by Dr. D. C. Hilton, Lincoln, Neb.; "When to Operate in Prostatic Hypertrophy," by Dr. Stokes; "Psychotherapy," by R. J. Midgeley, Omaha; "Heart Block," by Dr. A. D. Dunn, Omaha.

Medicolegal

Presumptions and Reasonable Requirements as to "Patent Medicines."

The United States Circuit Court in Rhode Island says, in Moxie Nerve Food Company of New England vs. Modox Company, that, in a former case it was queried whether it would not be reasonable for a court of equity to hold that a complainant seeking to protect his proprietary rights as the owner of a "patent medicine" should produce legal evidence that it is in fact what it purports to be. On a further consideration of this point, the court is of the opinion that the complainant, according to the ordinary principles of equity pleading and procedure, should be required, as a part of its affirmative case, to show that its preparation is what it purports to be.

If a complainant seeks protection in the sale of bottled goods, he should be willing to swear that his bottles contain what he represents to the public that they contain, and that his goods are in fact what they are sold for.

If a complainant in a bill of equity should allege, "I am selling to the public under a certain trade-mark an article which I represent to the public as fig syrup," such a bill, in the court's opinion, should be demurrable on the ground that the complainant has no right to protection in a mere business of making representations to the public, but only a bona fide business of selling an article for what it is in fact.

A court of equity should not extend protection to a business of selling medicine for paralysis or other serious diseases simply on proof that the preparation is a harmless beverage with some slight tonic properties. If the court should act on the presumption that the liquid in question is a preparation "from a simple sugar cane-like plant grown near the equator," of remarkable value as a food for the nervous system, and as a cure for paralysis and other serious diseases, it would, in the court's opinion, depart from the ordinary rules which require allegation and proof.

Courts of equity have frequently extended to the proprietors of "patent medicines" and like preparations privileges not extended to other litigants. They have assumed the truth of incredible or doubtful statements made by "patent medicine" vendors, without requiring them to make allegations to the court substantially similar to those made to the public, and have protected businesses which were neither presumptively nor in fact entitled to protection. Instances may be found where a complainant has received protection from a court of equity while making most incredible and preposterous statements to the public as the basis of his business.

Is there any reason why a court of equity should act on the presumption that a "patent medicine" vendor, or the vendor of a preparation offered to the public with statements as to wonderful ingredients and marvelous curative properties, states the truth on his bottles and labels? Eminent jurists have acted on the contrary presumption. In Williams vs. Williams, 3 Merivale, 157, 15 Jurist, 794, Lord Eldon said: "On general principles, I do not think the court ought to struggle to protect this sort of secrets in medicine." Other cases to the same general effect are referred to in the opinion in Worden vs. California Fig Syrup Co., 187 U. S. 527.

While this may be an extreme position, it is no more extreme than the cynical view that, despite extravagant and apparently unfounded statements, "patent medicines" should prima facie be regarded as properly entitled to protection.

Of the truth or untruth of certain representations or statements a court may take judicial notice. The ordinary rules as to judicial notice undoubtedly could be properly applied to preparations whose statements were on their face too preposterous or incredible. In many cases, however, the truth or untruth of representations can not be determined on the principles of judicial notice. A court should not, of course, take judicial notice that all "patent medicines" or secret preparations are fraudulent and lack merit, and refuse relief on this ground. It by no means follows, however, that it is required to presume that representations to the public are prima facie true. Ordinarily, those things of which a court does not take judicial notice must be proved.

To apply the rule that a complainant must allege fairly and fully what his business is, and produce proof substantially supporting his allegations, should not require of the complainant the allegation and proof of the minute particulars of his business; but it should, the court thinks, require a complainant who asserts that he has an article which is good as a beverage, and is also good as a cure or medicine because of certain ingredients, to make proof substantially to the extent of his general representations to the public.

The proprietor of a secret preparation may justly claim protection of a trade secret; but to the extent of his representations to the public secrecy is waived; and there is no hardship in requiring a complainant who has stated certain things to the public as truths in order to promote the sale of his goods to state the same things as truths to the court, and prove them as truths, in order to secure equitable relief. The right to preserve a trade secret does not carry with it a general right to have one's bare word or unsworn statement accepted in a court of equity, or excuse a failure to prove the truth of what is published to the public. To the extent that a manufacturer of goods chooses to reveal their character and composition to the public—to that extent he waives the right of secrecy in a court of equity.

If it is not incumbent on a complainant to prove something more than that he is representing his goods to the public in a certain way under a certain trade-mark, a court of equity, by ingeniously assuming the truth of what vendors tell the public about their goods, particularly goods of the "patent medicine" class, will indulge in a presumption not entertained by ordinary persons of intelligence, and which is contrary to that public experience which has resulted in the enactment by Congress of laws for the protection of the public against unscrupulous statements in relation to a very large number of articles in whose preparation there is an opportunity for adulteration, substitution or secret fraud.

The representation on the label of a package is a material part of the vendor's business, and no undue hardship or inconvenience will result to an honest vendor if he is required to prove the truth of his label as he is required to prove the truth of any other material fact. This rule may prove exceedingly embarrassing to many vendors of "patent medicines," but only to those who are guilty of misrepresentation and deceit. It need not prove embarrassing to one who wishes to keep a trade secret, for he need only forbear publishing what he does not care to prove.

Again, the court says that the defendant's evidence established affirmatively a very strong probability that the statement that Moxie is a preparation of a plant corresponding to the complainant's description of it is pure fiction, and that it contains no nerve food or curative agent other than a small amount of bitters, such as gentian or cinchona. The possibility that there are other ingredients which have escaped chemical analysis, and that there may be an ingredient which in any respect conforms to the descriptions of its origin and nature, is altogether too remote for consideration in the practical administration of equity.

A dealer in bottled goods who is unwilling to swear to the truth of the representations made to the public, or to swear that the bottles contain what the labels say they contain, and who has it in his power to produce convincing proof if his representations are true, can not expect a court of equity to come to his aid with artificial presumptions in his favor.

Harboring Pregnant Woman.

The United States Circuit Court, in Rhode Island, says that the case of Parkes vs. Seasongood was brought by a keeper of a summer hotel to recover damages caused by a nurse for the defendant's wife giving birth to a stillborn, illegitimate child in the room occupied by the defendant's wife and such nurse, etc. But, the court says, no authority was presented to show that, in permitting the use of a room for the delivery of a child, the defendant was guilty of violation of duty to the plaintiff. The delivery of a child in itself, whether it be legitimate or illegitimate in its parentage, is not an unlawful act; and such scandal as may have resulted from the delivery

could hardly be attributable to the delivery itself. Nor was any authority produced which in any degree tended to show that the defendant was liable for harboring a pregnant woman in apartments hired by him. While it is not improbable that an occurrence of this kind may have been regarded by guests as a sufficient cause for leaving the hotel, and while it may have deterred persons from going to the hotel, yet it can not be said that this was such a proximate result of the delivery of an illegitimate child that the defendant was under any obligation to guard against such scandal. The allegations that the defendant knowingly allowed the body to be hidden and to create odors presented a case of nuisance for which the defendant might be responsible if he knowingly suffered it to continue in rooms hired by him and under his control. But if the defendant were merely passive in suffering a person to conceal the body outside of the rooms under his control, it is doubtful if he would be guilty of an actionable wrong in neglecting the requirement of ordinary decency to inform the plaintiff. Furthermore, the court holds that, while it was alleged that the trained nurse was a servant of the defendant to take care of and wait on his wife, ordinarily a trained nurse, performing her usual duties with the skill which is the result of training in that profession, does not come within the definition of a servant, but rather is one who renders personal service to an employer in the pursuit of an independent calling. Any liability of the defendant in this case could not rest on the responsibility of a master for the acts of a servant.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York.

September 7.

1 *Attitude of Public Health Authorities Regarding Preservation of Milk by Heat. R. W. Raudnitz, Prague, Austria.
2 *Tuberculin and Other Tubercle Bacillus Products in Pulmonary Tuberculosis. K. von Ruck, Asheville, N. C.
3. Congenital Occlusion of Choanæ. J. E. Mackenty, New York.
4 *Misuse of the Voice and Its Cure. N. J. P. van Baggen, The Hague, Holland.
5 Inspection of Feces. L. H. Adler, Jr., Philadelphia.
6 Instruction to Those Having Syphilis. V. C. Pedersen, New York.
7 *Determination of Sex. A. H. Jackson, Los Angeles, Cal.
8 Phthisis Tent for Outdoor Life. N. B. Jenkins, New York.

1. **Preservation of Milk by Heat.**—Raudnitz considers that by heating milk the beneficent bacteria are destroyed, while noxious bacteria may be preserved, to proliferate later; and, moreover, that chemical changes of an undesirable character are produced in milk by heat. Commercially pasteurized milk should be prohibited by boards of health, he asserts, unless the process is under uninterrupted control.

2. **Sixteen Years' Experience with Tuberculin.**—Von Ruck tabulates the entire clinical material of himself and over 100 other physicians, making a total of 4,076 cases in all, with the following showing on discharge of the patients: Apparently cured, 2,002, or 49.1 per cent.; disease arrested, greatly improved or improved, 1,357, or 33.3 per cent.; failures, 717, or 17.6 per cent. For many years von Ruck has observed nothing of an adverse influence in tuberculin and has had no occasion to regret the administration of even a single dose, although these results were obtained long before the introduction of Wright's opsonic index, which is, nevertheless, an important introduction for the elucidation and improvement of the practical side of the subject.

4. **Misuse of the Voice.**—Van Baggen describes the method that has been used now for 20 years in Holland, of teaching speakers and singers to use the voice properly. It is possible, however, to explain only a part of the detail, for the teacher relies for a great part, even often entirely, on the ear, to distinguish faulty voice production. The method is especially serviceable in various morbid conditions, adenoids, enlarged tonsils, and paralysis of the vocal cords. Diaphragmatic breathing is the first point of importance. Then the patient has to learn to combine inhaling and exhaling through the nostrils with the preceding, and finally, the direction of the breath, not against the soft palate, but against the front of the mouth, has to be mastered.

7. **Determination of Sex.**—Jackson's view is that the ovum contains both male and female elements, which separate in it before fertilization. Therefore, the spermatozoon can not be the factor that causes division. Inasmuch as the mother's known will as to the sex of her future offspring can not be gratified, he thinks her nervous influence is excluded. He suggests that the struggle for existence possibly begins in the individual cell, the weaker of the polar bodies falling before the stronger.

Boston Medical and Surgical Journal.

September 5.

9 *General Considerations Regarding Tumors. W. T. Councilman, Boston.
10 *Stenosis of Pylorus in Infancy. C. L. Scudder, Boston.
11 *Lead Poisoning in a Rural Community. W. N. Cowles, Ayer, Mass.

9. **Tumors.**—Councilman says that the subject of tumors is of perennial interest for the clinician, the pathologist, the embryologist and the medical statistician. He describes the tumor as (a) a new formation of tissue, which (b) is without function, and (c) has the power of independent and unlimited growth. He discusses each of these points in detail. With regard to the causation of tumors, he discusses the three principal theories of their origin: 1, The traumatic theory; 2, the parasitic theory, attributing tumors to (a) bacterial, (b) blastomycetic, (c) protozoal, and (d) spirochetal parasites; 3, the embryonic or germinal theory. With regard to these theories, he says of the first that it must be remembered that tumors of various sorts are rather common pathologic conditions; that traumas are also common, and that combinations of the two incidents might be frequent and striking. The theory lacks all experimental confirmation, and, as it stands at present, has much the same footing as the theory of maternal impressions as a cause of malformations. In both, there are many striking coincidences. With regard to the second theory no specific bacterium has been detected, such bacteria as have been cultivated from tumor tissue having been ordinarily common invading wound bacteria. With regard to the blastomycetes, although their injection in animals to which they are infectious results in the formation of nodules, analogous to tubercle formations, histologic examination demonstrates that the nodule is composed of actively multiplying organisms and cells coming from the tissue. Nothing approaching a protozoal cycle has been made out, and the inclusions are best explained as cell and nuclear degeneration, or products resulting from inclusion of other cells, or products of cell secretion. The occasional appearance of spirochetes is explainable, he states, in the same manner as the occasional presence of bacteria. The argument in favor of a parasitic origin, based on the evidence that the tumors of certain animals are inoculable, would apply only to tumors of the carcinoma type, whereas all kinds of tumors have so much in common that any general cause must be applicable to all. Yet a parasitic causation would imply a different cause for every tumor, for our knowledge of infectious diseases forbids us to believe that the same parasite can produce in different cases respectively a carcinoma, a fibroma and a teratoma. In short, every theoretical consideration is against the theory and not one proven fact has been shown as a substantiation of it. The embryonic theory holds its ground better than either the traumatic or the infectious one. This theory brings tumors into close accord with malformations, in thus referring them to an embryonic condition. It accords best with what is known of these growths, and Councilman knows of nothing incompatible with it. He refers to the subject of separations of tissue and the development of tumor therein, e. g., fully developed adrenal tissue in the kidney. Many examples might be cited as evidence that tumors frequently originate in such misplaced tissues, but the theory does not explain the growth, why these misplaced tissues develop into tumors, why the development is associated with certain periods of life, why it is not possible to produce tumors by the artificial inclusion of embryonic tissue, why the inoculation of tumors succeeds only in certain animals. There must be added another hypothesis to this one:

that at a certain period these germinal remains gain a power that enables unrestricted growth to take place, or, what amounts to the same thing, the other tissues lose their power of restraining and regulating growth.

10. **Stenosis of Pylorus in Infancy.**—Stenosis of pylorus in babies presents a unique pathology—benign in anatomic character, malignant in fatality. In complete or even partial obstruction, if the child is not doing well, but is losing weight, operation is indicated. The operation of choice, Scudder states, is a posterior gastroenterostomy, done with clamp and suture. There exist cases, however, simulating pyloric stenosis with tumor, in which improvement and apparent recovery occur under stomach-rest, lavage with weak alkalies, warm abdominal poultices, nasal tube feeding, opium 1/80 grain before feeding, atropin, alkalies, experimentation with food changes, and rectal feeding. Scudder reports five cases, in the last three of which posterior gastroenterostomy was done, each child being now well and robust. In one case the operation was performed at the age of fourteen days. He describes the method of operation at length.

11. **Lead Poisoning.**—Cowles describes eighteen cases illustrating the many forms in which lead poisoning makes its appearance and the various kinds of damage done by it. Acute cases are few; chronic, painful and disabling affections and arteriosclerosis are in the majority. The use of lead pipe for carrying water is condemned.

New York Medical Journal.
September 7.

12 *Medicolegal Aspects of Imbecility. L. P. Clark, New York.
13 School Training of Backward Children. C. E. Atwood, New York.
14 *Normal Ovariotomy, Female Circumcision, Clitoridectomy and Infibulation. J. Knott, Dublin.
15 *Prevention of Deafness. W. Scheppegrell, New Orleans, La.
16 *Neurasthenic Neuralgias. F. K. Hallock, Cromwell, Conn.
17 First Five Years of the Graduate. W. G. Elmer, Philadelphia.
18 Police Methods for Sanitary Control of Prostitution. (Concluded.) F. Blerhoff, New York.

12. **Imbecility.**—Clark says that the difference between the medical and legal definitions adds artificial to inherent difficulties in regard to imbecility as well as to insanity. In law, imbecility implies not only arrested development, but the breaking down of intellect. Imbecility differs from lunacy in that it has neither delusions nor lucid intervals. The legal test is the inability to transact ordinary affairs of life, to understand their nature and effect, and to exercise will in relation to them. There is no general or single test for imbecility in law, the circumstances and capacity vary within extreme limits and each case must be judged on its merits. From a sociologic point of view the medicolegal distinction between idiocy and imbecility lies in the fact that the imbecile is more dangerous to society than the idiot, the latter being incapable of voluntary attention or of forming any idea of injury to his fellow, while many imbeciles are unreliable, mischievous and indolent. "On this basis, one may say that the idiot is extra-social, while the imbecile is anti-social." A legal condition of imbecility once established, the individual's status is clear. He can execute no contract or conveyance and is under the legal restrictions of a minor. An epileptic under a condition of continued epilepsy, however, is not subject to the same disability, because the law regards his condition only at the time of his fit. The author comments on the impropriety of allowing imbeciles to vote on public questions, and on the curious fact that the law demands less mental power for the execution of a will than for the making of a contract; the extension to the criminal code, of the just position of the civil code regarding limited responsibility, the marriage of imbeciles and epileptics, etc., and considers what may be expected through the establishment of the juvenile courts in regard to the outlook for feeble-minded children.

14. **Normal Ovariotomy.**—Knott presents an interesting historic and archeologic article.

15. **Deafness.**—Scheppegrell considers particularly deafness as applied to the partial inability to distinguish sound, which is the most frequent form. It is more frequent, probably, than is supposed, for there are no legal statistics, such as those of deaf mutism; but an examination of 11,855 cases of diseases of the nose, throat and ear showed 2,284 individuals (about 20 per cent.) with defective hearing. In children, dulness and inattention are often charged when a slight defect of hearing is at fault; inasmuch as by the effort of listening, the normal power of hearing is increased when the child's attention is attracted, he seems to hear perfectly and, consequently, the real disability passes unnoticed. The author next considers the usual sources of early acquired deafness—pathologic conditions in the nose and throat, injuries in the auricular canal, particularly infection conveyed by persons putting hairpins, tooth-picks, etc., in the ear, suppurative inflammation of the ear, nasal obstruction, and one of the most insidious yet most prevalent forms, non-suppurative inflammation of the middle ear. In this form the Eustachian obstruction is frequently so slight as not to warn the patient. The author takes occasion to urge a systematic testing of the hearing of school children, so that defective hearing may be discovered and remedied while there is time, instead of the child being branded as dull and inattentive.

16. **Neurasthenic Neuralgias.**—Abstracted in THE JOURNAL, June 29, 1907, page 2203.

Lancet-Clinic, Cincinnati.
September 7.

19 *Fatal Case of Cryptogenic Staphylococcus Bacteriemia. C. R. Holmes, Cincinnati.
20 Professional Secrecy—Venereal Disease. E. S. McKee, Cincinnati.
21 *Extirpation of Transitional Fold in Cases of Trachoma. J. S. Wyler, Cincinnati.

19. **Cryptogenic Staphylococcus Bacteriemia.**—Not only the rarity of this condition, but many notable features in the case, led Holmes to report it. A physician's daughter, 9½ years old, after apparent recovery from an attack of diphtheria, developed mouth breathing, which led to a diagnosis of adenoids and hypertrophied middle turbinate. Profuse discharge set in, and patches appeared on the soft palate. Thinking it a recurrence of the diphtheria, the child was given 4,000 units of antitoxin. Instead of improving she became profoundly ill, with temperature 103.6 F., pulse 140, respiration 74. The tongue was badly coated, breath was offensive, constipation and tympanites were present, and the nasal discharge disappeared. There was no headache or tenderness over any sinus. Pending cultures, another dose of 4,000 units of antitoxin was administered. Cultures showed a pure growth of staphylococcus. From this time on a condition partly resembling typhoid, partly profound sepsis, set in, but the Widal test was negative, as was a second test on the third day, while cultures from the patches were of almost pure staphylococcus. With the resumption of the nasal discharge, on the third day, there was a temporary improvement, but the condition continued to make progress on the fourth day, and on the fifth the blood examination showed staphylococcus infection. Endocarditis developed. On the sixth day a lobar pneumonia appeared, and from that day until death, on the eighth day, the clinical picture was that of pneumonia and a damaged heart with progressive exhaustion. The patient's father is inclined to attribute this condition to an infected diphtheria antitoxin, carrying a pure staphylococcus culture. The author then refers to previously reported cases of staphylococcus infection by Libman (THE JOURNAL, May 2, 1903, page 1260), Manton (THE JOURNAL, Oct. 31, 1903), and others. The fatality of the disease is very great, and there is little promise in the treatment. Antistreptococcus serum has frequently been used ineffectively. One case cited enforces the lesson of supporting treatment. Every focus accessible to surgical measures should be extirpated as soon as possible, and every abscess that can be reached by knife or aspirator should be opened and washed out. The treatment can be only symptomatic until some effective serum can be produced. An excellent bibliography closes the article.

21. **Trachoma.**—Wyler describes the operation for extirpation of the transitional fold in cases of trachoma and considers the ideal period for surgical intervention to be when the sharp demarcation line limits the granules of the transitional folds from the healthy bulbar conjunctiva. The operation may be performed on all four lids at the same sitting. The after-

treatment is described. The author closes with the remark that in cases of pannus, both trachomatous and eczematous, he has seen most praiseworthy results obtained from the use of a 20 per cent. very carefully prepared ointment of the yellow oxid of mercury.

American Journal of Medical Sciences, Philadelphia.

September.

22 *Dispensary Ideals. S. S. Goldwater, New York.
23 *Benign Stenosis of Pylorus. S. W. Lambert and N. B. Foster, New York.
24 *Heart Clot in Pneumonia. B. Robinson, New York.
25 Interpretation of Roentgen Ray Pictures as an Aid to the Early Diagnosis of Thoracic Aneurism. H. Sewall and S. B. Childs, Denver.
26 *Relative Value of High and of Low Altitude in Treatment of Tuberculosis. F. M. Pottenger, Los Angeles.
27 *Relations Between Diabetes and Pregnancy. A. A. Eshner, Philadelphia.
28 Hyperthyroidism. A. R. Elliott, Chicago.
29 Pyelonephrosis of Supernumerary Kidney. J. C. Munro and S. W. Goddard, Boston.
30 *Tendon Transplantation and Nerve Anastomosis. F. H. Richards, Philadelphia.
31 Pleural Pressure After Death from Tuberculosis. W. B. Stanton, Philadelphia.
32 Study of Normal Living Anatomy in Early Life. T. M. Rotch and A. W. George, Boston.
33 Use of Ammonium Oxalate in Blood-Culture Technic. A. A. Epstein, New York.

22. **Dispensary Ideals.**—Goldwater suggests measures for the reform of the dispensary system in New York and elsewhere, with a view to obviating the principal defects of the modern dispensary system, which are: 1. Abuse of the system by persons not entitled to charitable relief; 2. ineffective work due to overcrowding; 3. the inefficiency of mere hasty prescribing in the vast majority of non-surgical patients, who require hygienic and other supervision, and the extension of supervision to the home. Goldwater's plan is as follows: 1. Limited dispensary licenses, in the place of unlimited licenses, that is, limitation of the work of each dispensary to a suitable number of patients, to be residents of an assigned district. 2. Registration of all families claiming dispensary relief, and the refusal of relief (except in emergency cases) to all families not regularly registered and known; thus applying to dispensary work the methods, and perhaps, also, the machinery, of the Charity Organization Society and of other philanthropic associations, and, while extending the scope and aim of the dispensary, at the same time restricting the aid given to those absolutely in need of it. 3. A system of home visiting, aiming at the effective treatment of functional and other disorders depending on environment. 4. The use of the power of the state to prevent the embarrassment of existing dispensaries. 5. Periodical readjustment of district lines to allow for the shifting of population and for the enlargement of facilities of established dispensaries. On account of the varied character of established dispensaries, assigned dispensary districts at the outset will necessarily overlap; thus special dispensaries like those now devoted to orthopedic or to eye and ear work, with relatively extensive facilities of a certain kind, would be permitted to accept patients from districts greater than those assigned to large general dispensaries in the same locality having only limited facilities for the class of work carried on in the more highly specialized institutions. This subject is also considered editorially in this issue of THE JOURNAL.

23. **Benign Stenosis of Pylorus.**—Lambert and Foster find the most brilliant application for gastric surgery in benign stenosis of the pylorus, and insist that surgical intervention should not be kept for a last resort, but should be used before such irrecoverable dilatation has ensued that the mucous membrane is powerless to return to normal function. They further emphasize the importance of postoperative treatment to overcome the muscular atony of the stomach wall, to control the hypersecretion of hydrochloric acid, or to excite the mucous membrane to resume its normal secretory function.

24. **Heart Clot in Pneumonia.**—Robinson concludes as follows: 1. Heart clot as an immediate cause of death in pneumonia is more frequent than postmortem investigations, as now made, apparently sustain. 2. Clinical experience seems to justify the statement that the carbonate of ammonium has probably considerable efficacy, when properly given, in preventing heart clot.

26. **Altitude in Tuberculosis.**—Pottenger is led to the conclusion that tuberculosis is a disease that is best treated at low elevations.

27. **Diabetes in Pregnancy.**—Eshner concludes his researches into the relations between diabetes and pregnancy with the following summary: There is evidence to show that the power of assimilating carbohydrates is diminished in conjunction with pregnancy, and this deficiency may be manifested by the presence of sugar in the urine. Transitory glycosuria toward the end of pregnancy or during the puerperium may be considered physiologic and related to the activity of the mammary glands in the secretion of milk; it is, therefore, a resorption phenomenon. Diabetes is an uncommon complication of pregnancy, partly because the disease is, in general, less common in women than in men, but principally because diabetes occurs, as a rule, at a later period of life than that at which pregnancy usually takes place. Occasionally diabetes has been noted in two or more successive pregnancies. Pregnancy occurs even more rarely in diabetic women, partly because, in addition to the reasons already given, of the depraved condition of the diabetic patient and of the disordered function and structure of the internal generative organs. The complication of the one condition with the other usually increases the gravity of both. Often the fetus dies *in utero*, and miscarriage or premature labor takes place, or the child may die during birth or shortly afterward. The child also may be diabetic. The liquor amnii has been found increased, and in some instances also to contain sugar. The mother often dies of the disease, some time during pregnancy or childbirth, or shortly afterward. Accordingly, a diabetic woman should not marry, or if married, she should not become pregnant. In the event of a diabetic woman becoming pregnant, or of a pregnant woman becoming diabetic, pregnancy need not be interrupted artificially unless some special indication arises. If the woman is safely delivered, she should not nurse her child.

30. **Tendon Transplantation and Nerve Anastomosis.**—Richards states that tendon transplantation is not a cure-all in orthopedic surgery; much of its success depends on after-treatment. The limb should be mobilized and left in a plaster cast for from four to six weeks, and should be enclosed in splints for six months subsequently, during which time massage, electricity, gymnastic exercises and baths should be made use of. The longer and more careful the after-treatment, the better the results. It is the combination of procedures taken in connection with transplantation that gives the best result.

This author states that nerve anastomosis, when successful, will have decided advantages over tendon transplantation, since it restores the functions of the paralyzed muscle, and leaves all other muscles intact, instead of entirely throwing out of action diseased muscles and using others to perform a function which heretofore they have not been called on to do. The future of the operation is speculative, but results already obtained lead to the hope of gratifying success, particularly in the treatment of anterior poliomyelitis.

Texas State Journal of Medicine, Fort Worth.

August.

34 *Federal Meat Inspection and Its Limitations. A. H. Wallace, Fort Worth.
35 Summary of Medicolegal Questions Arising in Case of Albert T. Patrick. J. S. Turner, Fort Worth.
36 Treatment of Crushed, Lacerated and Infected Wounds. R. W. Knox, Houston.
37 Case of Parinaud's Conjunctivitis. R. E. Moss, San Antonio.
38 Sympathetic Ophthalmia. E. L. Burton, McKinney.

34. **Meat Inspection.**—Wallace says that the preponderating proportion of condemnations for tuberculosis calls attention to the increasing importance of this disease from the standpoint of meat and milk inspection, and emphasizes the need of the most careful supervision of the sources of supply of these foods. The old theory of the inhalation of dried tuberculous matter as the most important, if not practically the only, source of infection, is gradually giving way to the more modern idea that ingestion plays a leading part, and that in most cases infection arises from food containing tubercle bacilli either from its origin or from being contaminated by tuberculous subjects during the course of preparation. The discovery

that the feces are the principal means of spreading infection in the case of bovine tuberculosis, and the constant resulting contamination of the milk in all dairies where the disease is present, also emphasizes the need for efficient inspection of dairy cattle.

New York State Journal of Medicine, Brooklyn.

August.

39 *The Irritable Non-Inflammatory Appendix. J. F. Black, White Plains.
40 Routine Examination of Urine for Indican. J. D. Olin, Watertown.
41 *Status and Disposition of the Criminal Lunatic. R. B. Lamb, Matteawan.
42 *Surgery of Foreign Bodies in Respiratory Tract. W. G. Macdonald, Albany.
43 Foreign Bodies in the Uterus. R. S. Talmey, New York.
44 Cyst of the Mesentery. E. A. Vander Veer, Albany.
45 History of the Medical Society of the State of New York. (Continued.) J. J. Walsh, New York.

39. **Irritable Non-Inflammatory Appendix.**—Black considers at length that form of irritable appendix, without past or present inflammatory influences, which has no direct relation to appendicitis, and is often a purely mechanical condition, yet which gives rise to continuous symptoms that may undermine the patient's health and warrant surgical intervention. The causation is threefold: 1. Mechanical abnormalities of the appendix or its mesentery, or involving the organ as a whole. 2. Hyperplasia of lymphoid tissue. 3. Changes in nerve supply. Black describes 10 types: 1, Residuary concretions; 2, appendicular colic types; 3, foreign body type; 4, angulation type; 5, incarcerated type; 6, adenoid type; 7, involution type; 8, passive hyperemic type; 9, interstitial neuritis type; 10, combination type; describes their clinical features, differential diagnosis and treatment, which is removal. He recommends in these cases the following incisions: A transverse incision, starting half an inch to the right of the rectus, on a line drawn between the superior iliac spines, and continued toward the right one an inch or more as required. The incision includes all tissues down to the external oblique. He claims the following advantages for this incision: 1. The fibers of the internal oblique and transversalis muscles can be separated with greater ease, both from a manual and a visual standpoint, the skin opening being almost in the same direction as the opening to be made in these muscles. 2. As the incision crosses the external oblique at almost right angles, it makes a slightly stronger abdominal wall. 3. In cases of abscesses forming in the skin the chances of infecting the external oblique incision are greatly lessened, as the two incisions only come in contact at one point. 4. This incision is probably more directly over the base of the appendix than any other.

41 and 42.—Abstracted in THE JOURNAL, March 2, 1907, page 823.

Chicago Medical Recorder.

August.

46 Case of Suppurative Wounds Following Abdominal Section. T. J. Watkins, Chicago.
47 *Relation of Teaching of Clinical Obstetrics to Problem of Medical Charities. C. S. Bacon, Chicago.
48 Infant Feedings with Special Reference to the Use of Citrate of Soda. J. W. Van Derslice, Chicago.
49 Method for Functional Examination of Ear, as Used in the Politzer Clinic, Vienna. H. Kahn, Chicago.
50 *Tuberculosis in Children. C. W. Bridge, Elgin, Ill.
51 Surgical Cases. C. O. Young, Chicago.

47. **Clinical Teaching of Obstetrics.**—Bacon says that it is coming to be recognized that there is a pauperizing tendency in the bestowal of medical aid without requiring any equivalent. If patients in emergency cases, like surgical accidents, were the only ones thus helped, the temptation would not be so great, but when a pregnant woman learns that she can be confined free in a hospital and have the best of professional care and skill, she will make no effort to accumulate means to pay properly for the services of a private physician. Bacon urges, therefore, that wherever possible all medical aid should be given in teaching clinics, as by acting as material for clinical teaching the patient renders a return service for the services freely granted her. In regard to the idea that in obstetrical institutions, where alone this principle of teaching clinics is commonly forbidden, such teaching would offend the sense of modesty of the patient, Bacon points out that the sentiment of the community depends largely on the way in which patients are educated by physicians. Not so long ago "catheterizing under the sheet" was insisted on, and Bacon asks whether American women of the better classes are less womanly or civilized nowadays because they appreciate the importance of disinfection and inspection of the process of labor. Such knowledge must be extended to the poorer women. A competent and responsible teacher, limitation of the number of students, and an adequate supply of cases would be necessary for successful obstetrical clinical teaching. As the result of a consideration of the standard required by the Association of American Medical Colleges, Bacon suggests that the obstetrical clinic should have at least 100 hours, or five hours a day for twenty days. One labor a day, with daily visits to the puerperæ and the babies, would insure the profitable use of this time by the student, whose time should be divided between the maternity hospital and the out-patient dispensary. Six students should constitute a class, subdivided into three squads of two each; one squad in dispensary work while the other two are on hospital service. Seven classes could thus work each year, providing for 102 students, which would require 365 dispensary cases, and the same number of hospital cases. The benefits of such a plan would be not only to the patient and the children, but particularly to the community, in the reduction of puerperal infection and other accidents of pregnancy and the puerperium.

50. **Tuberculosis in Children.**—Bridge summarizes his paper practically as follows: 1. If possible, children should be well born. 2. Equally important it is that they be removed from tuberculous parents, nurses or relatives. 3. Next in importance is a sanitary dwelling, with abundant air and sunshine. 4. Sufficient nutritious food by day and sound sleep by night are essentials. 5. In milk, the principal food of infancy, there lurks danger; but not so great for tuberculosis as some enthusiasts would have us believe. 6. Infection through the respiratory system constitutes, as it always has, the greatest danger. 7. Tuberculosis of children is very prevalent, and extremely dangerous to life. 8. It often runs a rapidly fatal course; and the generalized forms of the disease are relatively more frequent than in adults. 9. It is impossible to overestimate the importance of the lymphatic system; and that a glandular focus is the starting point of acute generalized processes in the majority of cases. 10. Many cases of tuberculosis in children are extremely difficult of recognition, specific reaction apart. 11. In estimating the relative importance of etiologic factors, the danger is not in overestimating the predisposition so much as in underestimating the dangers of infection.

American Practitioner and News, Louisville.

August.

52 Cholelithiasis. H. A. Davidson, Louisville, Ky.
53 Tuberculosis of the Bladder. J. M. Sleicher, Seattle, Wash.
54 Serum Treatment of Exophthalmic Goiter. H. C. B. Alexander, Chicago.

The Postgraduate, New York.

August.

55 Pathology of the Conjunctiva. H. T. Brooks and E. L. Oatman, New York.
56 Etiology, Pathology and Treatment of Pneumonia. W. H. Porter, New York.
57 *Massage of Inferior Turbinates in Atrophic Rhinitis. W. A. Weightman, New York.
58 Congenital Stenosis of the Pylorus. H. B. Sheffield, New York.
59 Eclampsia with Unusual Features. W. H. W. Knipe, New York.

57. **Massage of Inferior Turbinates.**—Weightman reports four cases in which he resorted to massage of the inferior turbinates in atrophic rhinitis. The patients were instructed to keep their nostrils clear of crusts by the free use of diluted Dobell's solution, at least three times a day, and to remain in the house for at least half an hour after using it. The inferior turbinates were massaged twice a week by gentle stroking with an applicator carrying a pledget of cotton soaked in the solution. Considerable improvement resulted in a month. The mucous membrane became more nearly normal in appearance, the dryness disappeared, and there was considerable return of the power of smell. In treating these cases, the administration of small doses of potassium iodid seems to aid materially by increasing the nasal and pharyngeal mucus.

Indiana Medical Journal, Indianapolis.
August.

60 Use and Abuse of Obstetric Forceps. G. T. McCoy, Columbus.
61 A Year's Clinical Experience at French Lick Springs. G. D. Kahlo, French Lick Springs.
62 Hypertrophied Prostate. F. R. Charlton, Indianapolis.
63 Infantile Hypertrophic Stenosis of the Pylorus. O. N. Torian, Indianapolis.
64 Calorimetric Principle in Infants. G. B. Jackson, Indianapolis.

Buffalo Medical Journal.
August.

65 How Often Are Vesical Calculi Overlooked? J. A. Gardner, Buffalo.
66 Mental Stigmata of Degeneration. A. MacDonald, Washington, D. C.
67 The Modern Standard Business Honor. J. W. Jenks, Ithaca, N. Y.
68 Transmissibility and Curability of Cancer. W. S. Baladridge, N. Y.
69 *Therapy of Sciatica. E. S. McKee, Cincinnati.

69. **Therapy of Sciatica.**—This is a résumé of the recent literature on this subject.

St. Paul Medical Journal.
August.

70 Renal Pathology or Effects of Disease and Drugs on the Urine. H. D. Valin, St. Peter, Minn.
71 Gastric Ulcer. T. W. Stumm, St. Paul.
72 Pruritus Ani. R. Foster, St. Paul.
73 Rectal Ulcer. O. C. Strickler, New Ulm, Minn.
74 Hemorrhoids. W. H. Valentine, Tracy, Minn.

Journal of Nervous and Mental Diseases, New York.
August.

75 Classification of Psychoneurotics and the Obsessional Element in Their Symptoms. G. L. Walton, Boston.
76 Use of Social Intercourse as a Therapeutic Agent in Psychoneuroses. S. I. Schwab, St. Louis.
77 Myoclonus Epilepsy. W. T. Shanahan, Sonyea, N. Y.

Archives of Otology, New York.
August.

78 Herpetic Inflammation of the Geniculate Ganglion. J. R. Hunt, New York.
79 Demonstration of Disturbances of Equilibrium in One-sided Disease of the Labyrinth. Dr. Krotos.hiner, Bresiau, Prussia.
80 Hypertrophic Nasal Catarrh and Complications. C. A. Bucklin, New York.
81 Case of Diphtheria with Otitic Complications. P. D. Kerrison, New York.
82 Otitic Meningitis. A. Knapp, New York.
83 Three Cases of Infective Sinus Thrombosis. J. D. Richards, New York.
84 Case of Serous Meningoencephalitis. A. Blau, Görlitz, Prussia.
85 Otitic Purulent Sinus Thrombosis Without Fever. H. Schroeder, Erlangen, Germany.

American Journal of Urology, New York.
August.

86 Dawn and Development of Urology. B. Lewis, New York.
87 Pathogenic Significance of Cheyne-Stokes' Respiration in Nephritides. C. G. Cumston, Boston.
88 Etiology and Pathogenesis of Infectious Arthritides of Urinary Origin. G. Bodin, Lyons, France.
89 Study of Gonorrheal Pus in Staining Sera. M. Favre, Lyons, France.

The Ophthalmic Record, Chicago.
August.

90 Position of the Ophthalmologist in Treatment of Diseases of the Accessory Sinuses of the Nose. W. C. Posey, Philadelphia.
91 Color Sense and Visual Adaptation of Birds. C. Hess, Würzburg, Germany.
92 The Astigmic Lens to Determine the Amount and Principal Meridians of Astigmia. E. Jackson, Denver.
93 Case of Gummatous Iritis. R. W. Rutherford, Chatham, Canada.
94 Local Application of Chlorate of Potash in Epithelioma of the Lid. W. Zentmayer, Philadelphia.

Illinois Medical Journal, Springfield.
August.

95 *Early Diagnosis of Pulmonary Tuberculosis. R. H. Babcock, Chicago.
96 *Social Aspects of Tuberculosis. H. B. Favill, Chicago.
97 *Management of Tuberculosis. C. L. Wheaton, Chicago.
98 *Sanatorium Treatment of Tuberculosis. E. H. Butterfield, Ottawa.
99 Nervous and Mental Phases of Tuberculosis. F. P. Norbury, Jacksonville.
100 *Tuberculosis of the Ocular Structures. C. A. Wood, Chicago.
101 *Diagnosis and Treatment of Laryngeal Tuberculosis. W. E. Casselberry, Chicago.
102 Blood Plates and Their Clinical Significance. O. O. Stanley, Champaign.

95, 96, 97, 98, 100, 101.—Abstracted in THE JOURNAL, June 8, 1907, page 1980.

Mississippi Medical Monthly, Vicksburg.
August.

103 Quinin in Pneumonia. D. W. Jones, Fernwood.
104 Gastroenterostomy. J. Darrington, Yazoo City.
105 Forceps. W. H. Rowan, Wiggins.
106 Electrical Treatment of Dysmenorrhea. A. Granger, New Orleans, La.

Maryland Medical Journal, Baltimore.
August.

107 The War on Tuberculosis. J. S. Fulton, Baltimore.

Monthly Cyclopedia of Practical Medicine, Philadelphia.
August.

108 Nature of the Opsonins, and the Limit of Bacterial Inoculations in Treatment of Infections. D. H. Bergey, Philadelphia.

Medical Sentinel, Portland, Ore.
July.

109 Impediments to Medical Legislation. T. J. Sullivan, Butte, Mont.
110 Therapeutics of Radium. L. P. McCalla, Boise, Idaho.
111 Uterus Didelphys or Double Uterus. A. L. Monzingo, Tacoma, Wash.

West Virginia Medical Journal, Wheeling.
August.

112 The Medical Society as a Moral Force. C. A. Wingerter, Wheeling.
113 Epilepsy. J. R. Bloss, Huntington.
114 Alcoholic Paranoia. T. Diller, Pittsburgh.
115 The Division of Fees. J. E. Cannaday, Hansford.
116 Recumbency in the Treatment of Infantile Paralysis. A. B. Judson, New York.

Washington Medical Annals, Washington, D. C.
July.

117 Control of Epidemic Uncinariasis in Porto Rico. B. K. Ashford, U. S. Army.
118 Aneurism of Arch of Aorta, Ruptured Externally Through an Abscess. D. S. Lamb, Washington.
119 Hydrocephalus. I. W. Blackburn, Washington.
120 Floating Spleen. A. L. Staveley, Washington.
121 Cases Treated with Radium. T. Abbe, Washington.
122 Case of Papillo-Adenoma of the Sigmoid Flexure. A. L. Staveley, Washington.
123 Case of Thyroiditis. D. S. Lamb, Washington.
124 Case of Coal-Miner's Lung with Cancer Nodules. D. S. Lamb, Washington.

Interstate Medical Journal, St. Louis.
July.

125 Significance of Vertigo Occurring in Connection with Diseases of the Ear. W. A. Wells, Washington, D. C.
126 Combating Plague in Japan. S. Kitasato, Tokyo, Japan.
127 An Unusual Transmission of Measles. A. S. Bleyer, St. Louis.

International Clinics.
June.

128 Vaccine Treatment of Infectious Diseases. R. I. Cole, Baltimore.
129 Treatment of Rheumatism. B. Abrahams, London, England.
130 Thermal Treatment of Aix-les-Bains. J. Dardel, Aix-les-Bains, France.
131 Management of Exhaustion States in Men. J. M. Taylor, Philadelphia.
132 Plea for Laparotomy Rather than Paracentesis in Ascites. G. Dock, Ann Arbor.
133 Paralysis of Oculomotor Nerves in Diabetes. Dieulafoy, Paris.
134 Detection of Ova of Intestinal Parasites in Feces. M. Letulle, Paris.
135 Clinical Examination of Cerebrospinal Fluid. F. P. Reus, Ann Arbor.
136 Perforated Duodenal Ulcer. H. S. Clogg, London.
137 Surgical Syphilis. C. G. Cumston, Boston, Mass.
138 General Anesthesia Unjustifiable in Radical Cure of Inguinal Hernia. J. A. Bodine, New York.
139 Asepsis and Antisepsis. J. W. Wainwright, New York.
140 Treatment of Postpartum Hemorrhage. J. R. DeLee, Chicago.
141 Appendicitis in Pregnancy. C. Lockyer, Plaistow, London.
142 Comparative Physiology of Menstruation. F. H. A. Marshall, Edinburgh, Scotland.
143 Treatment of Dysmenorrhea. C. D. Palmer, Cincinnati, Ohio.
144 Gonorrhea and Syphilis in Childhood. T. M. Rotch, Boston, Mass.
145 Essentials of Scientific Infant Feeding. G. R. Pisek, New York.
146 Insanity in the Aged. C. W. Burr, Philadelphia.
147 Facial Diplegia with Labio-Glosso-Laryngeal Paralysis. A. Gordon, Philadelphia, Pa.
148 Inebriety. T. D. Crothers, Hartford, Conn.
149 Pathology and Etiology of Tabes Dorsalis. S. E. Jelliffe, New York.
150 Experimental Cerebrospinal Meningitis. S. Flexner, New York.
151 Pathologic Anatomy of General Infection with Gonococcus. J. F. Tyree, Chicago.
152 Bone Marrow. W. E. C. Dickson, Edinburgh, Scotland.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.
August 24.

1 *The Unborn Child: Its Care and Rights. T. A. Helme.
2 *Puerperal Morbidity. E. H. Tweedy.
3 *Artificial Dilatation of Cervix. R. Jardine.
4 *Measures to Secure Earlier Recognition of Uterine Cancer. H. R. Spencer.
5 *Chorioepithelioma. W. C. Swayne.
6 *Operative Treatment of Carcinoma of the Cervix. C. Lockyer.
7 Complete Rupture of Uterus with Escape of Fetus into the Peritoneal Cavity. J. M. M. Kerr.

8 *Indications for Operations on Uterine Fibroids and Methods of Performing Them. P. Strassmann.
9 Technic of Abdominal Hysterectomy for Fibroids. F. Edge.
10 Fibroids of Fibromyomatous Tumors in Unusual Sites. S. J. Cameron.
11 Series of 100 Consecutive Laparotomies in Hospital Practice. J. I. Parsons.
12 Ticks Infesting Rats Suffering from Plague. B. Skinner.

1. **The Unborn Child.**—Helme summarizes a most thoughtful article as follows: We must recognize the rights of the unborn child: 1, to life; 2, to protection from the hereditary taint of degeneracy; 3, to health—that is, to conditions conducive to the safeguarding of its health; 4, to Nature's food (when born)—that is, to its mother's milk; 5, to its natural protection (when born)—that is, to its mother's care.

The recognition of these rights demands the recognition of the following duties on the part of the parents, the profession and the state: 1. On the part of the parents: A clean and normal life before and after conception. 2. On the part of the mother by (a) the consistent regulation of her mode of life; (b) the abstention from alcohol; (c) the feeding of the child by the breast; (d) the care of the child after birth. 3. On the part of the medical profession by (a) the restriction of feticide; (b) the education of a healthy public opinion. 4. On the part of the state: (a) By restriction of procreation to the fit (i) by the regulation and restriction of marriage to the fit, either by education or legislation; (ii) by the prevention of procreation by the unfit—whether by segregation of the unfit, or sterilization of degenerates, or the evolution of a public healthy opinion. (b) By regulation of the life of the pregnant woman (i) by the state provision of food for the necessitous; (ii) by the provision of hospitals for the reception of women during pregnancy; (iii) by the state prohibition of woman's work and employment during pregnancy. (c) By immediate registration of (i) stillbirths; (ii) premature labors; (iii) abortions, and, if practicable, Helme adds, pregnancy. (d) By registration of births within twenty-four hours; (e) by regulation of the life of the woman who has given birth to a child (i) by state provision of food for the necessitous; (ii) by state prohibition of woman's work for at least six months after confinement.

2. **Puerperal Morbidity.**—Tweedy calls attention to the fact that while mortality in childbirth is tabulated and the deaths due to sepsis are differentiated, scant attention is given to the recording of cases in which acute or protracted illness is not followed by a fatal issue. He refers to the standard index of morbidity that has recently been determined by the British Medical Association, and urges its employment, for it insures with certainty that all cases of serious puerperal disease will be recorded and will show with a large degree of accuracy the amount of success obtained by diverse obstetrical methods.

3. **Artificial Dilatation of the Cervix.**—Jardine justifies artificial dilatation of the cervix to hasten delivery at full term, when demanded in the interests of the mother or child, or both, but condemns it when undertaken merely to save the time of the obstetrician. He describes the most appropriate methods of producing dilatation—by rubber bag, vaginal plug, manual and bimanual dilatation, expanding dilators, multiple incisions of the cervix, and vaginal Cesarean section. He lays stress on the fact that in deciding on the best operation to perform in any case, the obstetrician must be guided not only by the condition of the cervix, but also by the amount of his experience. In antepartum hemorrhage, especially when due to placenta prævia, the vaginal plug or Champetier de Ribes' bag should be used. He deprecates either abdominal or vaginal Cesarean section in placenta prævia. In cases other than antepartum hemorrhage, when the cervix is rigid and the os only admits the finger, manual dilatation will probably be impossible; Bossi's dilator may succeed, but it must be used with very great caution. If the cervix is taken up, the best method is that of multiple incisions; but if the cervix is uneffaced, Cesarean section is the operation of election. Dührssen's operation for vaginal Cesarean section by perineal vaginal incision is described.

4. **Early Recognition of Uterine Cancer.**—Spencer insists on the need of earlier recognition of uterine cancer. The patient's ignorance, the practitioner's delay in examining on the incidence of suspicious symptoms, the patient's disinclination to be examined, and the occasional difficulty of distinguishing between malignant and benign growths, are the chief causes of delay. He gives an instance of the service which the family physician may render by an early diagnosis. Eight years ago a widow, aged 63, under treatment for influenza, casually referred to a slight vaginal discharge. The physician at once suggested examination, overruled the patient's scruples, and found a malignant growth, which was removed by Spencer by high amputation of the cervix with a Paquelin cautery. The growth was a squamous carcinoma. The patient has had no trouble since, and now, eight years later, is in perfect health. This fact Spencer considers due to the general practitioner.

5. **Chorioepithelioma.**—Swayne reports two cases and insists on two points: First, the vital necessity of exploring the uterus in all cases in which, after pregnancy terminated by abortion or ordinary parturition and whether molar or not, hemorrhage of an intractable type occurs, even if this is not severe. Secondly, the incidence in both his cases of pulmonary symptoms, which disappeared, in the first case, after the removal of the uterus; in the second case they increased until death occurred. These symptoms were attributable, probably in both cases, to pulmonary metastases.

6. **Cancer of the Cervix.**—Lockyer gives later results in thirteen cases of cancer of the cervix, reported by him at the meeting of the British Medical Association in 1905. Of these only four patients were free from disease, the last having been operated on so recently as June, 1905. He has, therefore, adopted Wertheim's procedure, which he considers the operation of the future, and the only scientific operation for carcinoma cervicis at the present time. It enables the growth to be removed without its ever appearing in the operation area from first to last.

8. **Uterine Fibroids.**—Strassmann, while a pronounced advocate of vaginal operation, recognizes that the choice of route depends on the size, position and number of tumors; and he does not hesitate in the least to open the abdomen for colossal tumors, for subserous pedunculated growths, or for solitary interstitial growths larger than a child's head and beyond obstetric possibility. When the mass consists of numerous nodules, which can be determined only under narcosis immediately before the operation, one may begin boldly by the vagina. Enucleation is undoubtedly more difficult and has a mortality higher than total hysterectomy. Recurrence is possible but rare, and pregnancy after enucleation is also rare, though he has had one case in a patient aged 36. So long as the cavity of the uterus is not invaded, or not invaded to a serious extent, the chances of enucleation are good. For all patients over 40 he prefers total extirpation, unless the case is one of simple polypus or of tumors to be removed without opening the plica. In abdominal operations the choice of enucleation or total extirpation depends on the same conditions as in vaginal methods. Total hysterectomy avoids all trouble, cancerous or otherwise, with the cervical stump. The great drawback to Wertheim's operation lies in the primary risks. These over, the secondary risk from recurrence is reduced more than threefold. Lockyer keeps patients in the hospital for two weeks, giving them strychnin by the mouth, cauterizing the growth and cleansing the vagina by weak formalin solution a week before operation. This, he says, makes a great difference in results. He also lays stress on the abandonment of the gauze drain used by Wertheim.

The Lancet, London.

August 25.

13 *Principles of Vaccine Therapy. A. E. Wright.
14 *Stricture and Traumatism of the Appendix. W. H. Battle.
15 *Nature and Management of Hypertrophy of the Heart. A. Morison.
16 Pancreatitis Due to Direct Extension of Malignant Growth of Gall Bladder Along the Common Bile and Pancreatic Ducts. A. W. M. Robson and P. J. Cammidge.
17 *Calculi in the Appendix. D. T. Barry.
18 Case of Appendicitis Excited by a Clove. W. H. Barnett and J. W. S. Macfie.
19 Record of the Physical Examination of 1,000 Boys at Their Entrance on Public School Life. C. Dukes.
20 Bacteriologic Examination of Blood in Case of Typhoid. W. Muirhead.

13.—This article appeared in full in THE JOURNAL, August 10, page 479, and August 17, page 567.

14. **Stricture and Traumatism of Appendix.**—Battle notes that narrowing of the lumen of the appendix is commonly met with on opening it after removal. These strictures he divides into organic, that is, with gross changes in the appendix, and functional, when the appendix is not grossly diseased. The first class is the result of inflammatory processes, the second of kinking or external pressure. There is no distinguishing clinical sign of difference between appendicitis due to stricture and one due to other causes. After several recurrences of increasing severity, however, it is right to suspect that the appendix is strictured. Battle discusses traumatism as the cause of this stricture. It is not usual to find foreign bodies forming part of a concretion in the appendix. Concretions consist mainly of fecal matter which has hardened and excited the secretion of mucus. They are mostly due to the action of micro-organisms as in the case of gallstones. The number that may be found is uncertain, though Battle has seen as many as five. Their presence may have marked influence in determining an attack of appendicitis after injury. Considering the increase in disease of the appendix in recent years, which Battle gives good reasons for declining to regard as due to its having been overlooked, he points out that appendicitis is a disease caused by the action of germs that would normally be confined to the interior of the intestinal tract, but which gain admission through some superficial lesion to the tissues outside the epithelial lining, where alone they become dangerous. He investigates the question as to what will produce such a superficial lesion and yet give but little evidence of its action, and passes under review solder from food cans, enameling from culinary vessels, and the siliceous particles of wheat, and concludes that such a causative factor may be found in all probability in metallic particles from the rollers used nowadays in milling wheat. As a remedy, he suggests the use of magnets to withdraw such particles from the flour on its way from the rollers to the bags, as well as before passing it over the rollers to extract those that may have found their way in on the road to the mill. He then discusses larger foreign bodies and ends with report of cases.

15. **Hypertrophy of Heart.**—Morison considers the pathology of hypertrophy of the heart, and in reference to treatment, insists on the importance of the neural factor in the maintenance of an undisturbed cardiac action. He insists that no more injudicious course can be taken than to render the patient nervous about the condition of his heart, or so to hedge him about with restrictions as to suggest that little lies between him and dissolution. While the avoidance of strenuous exertion, especially in aortic cases, is desirable, and carefulness imperative, during intercurrent disease or great emotional distress, given reasonable observance of precautions for such contingencies the more rapidly the patient forgets he has a heart, the better. As time advances and hypertrophy and subsequent dilatation ensue, resulting in ineffective pulsations and the crowding of neighboring organs, the question arises of what can be done for relief, with reference to the orthopnea and dysphagia. The author reports a case in which two inches of the second and third rib cartilages were resected, with the result that the patient now reclines comfortably and breathes and swallows easily. He asserts that the operation was not difficult, and that the general effect in improving the action of the heart and promoting an easier circulation was obtained. He thinks that we shall soon be justified in following Hunter's advice to Jenner: "Why think? Do it."

17. **Calculi in the Appendix.**—Barry thinks that excluding parasites, foreign bodies in the lumen of the appendix may be classified in the order of their frequency: 1, Fecal molds; 2, enteroliths, with or without a foreign body in the nucleus; 3, gallstones; 4, true foreign bodies.

Medical Press and Circular, London.

August 14.

21 Recent Treatment of the Insane. G. H. Savage.
22 Rheumatoid Arthritis. A. P. Luff.
23 Auto-deformities of the Foot. P. Gallois.
24 Medical Aspect of Dental Caries in Childhood. G. F. Still.

Clinical Journal, London.

August 14.

25 Diagnosis and Indications for Operation in Gallstones. H. White and M. Robson and others.
26 Special Feature of Appendicitis in Children. P. L. Mummery.
27 Treatment of Whooping Cough. D. M. McDonald.

Australasian Medical Gazette, Sydney.

July 20.

28 The Profession and the Public. E. W. Morris.
29 Some Clinical Cases: An Essay on Rational Therapeutics. A. J. Turner.
30 Case of Bilharzia Hematobia. B. J. Newmarch.
31 Etiology of Intussusception. P. L. Hipsley.
32 *Relation of Urticaria to Gynecology. W. T. Chenhall.
33 Two Cases of Typhoid with Symptoms of Cholecystitis. H. G. Tymms.
34 Two of Typhoid with Purpuric Hemorrhages. H. G. Tymms.

32. **Urticaria in Relation to Gynecology.**—Chenhall refers to two cases of severe urticaria, occurring concurrently with amenorrhea and with combined menorrhagia and dysmenorrhea due to fibroids, respectively. From a thorough survey of the disease, he finds it difficult to accept the view that all or even any cases are reflex in origin. He analyzes the pathology of urticaria and concludes that all cases of urticaria except those due to local animal, vegetable or mineral irritation, are due to a form of poisoning by toxins in the circulation, acting directly on the peripheral vasomotor nerve mechanism or on the endothelial cells of the capillaries, thus producing wheals. He states that we must look forward to the time when we shall be able to neutralize these toxins and antitoxins and that, meanwhile, the elimination of the virus is the therapeutic indication. There is no warrant for affirming a direct causal relationship between lesions of the reproductive organs and urticaria.

Annales de l'Institut Pasteur, Paris.

June, XXI, No. 6.

35 *Tuberculous Infection of the Guinea-pig and Vaccination by the Digestive Tract. (Tub. exp. du cobaye.) A. Calmette, C. Guérin and M. Breton.
36 Rôle of Helminths and the Larvæ of Helminths and of Insects in Transmission of Pathogenic Microbes. Weinberg.
37 Action of Piperidin and of Other Amins on Bacteria, Especially on the Glanders Bacillus. (Action des amines sur les bact.) M. Nicolle and A. Frouin.
38 Comparative Cytology of Spirochetes and Spirilla. N. H. Swellengrebel.
39 Colloidal Properties of Starch. (Propriétés de l'amidon.) E. Fouard.
40 Transmission of the Trypanosoma dimorphon by the Glossina palpalis. R. Desv. F. Rouband.
41 Animal Trypanosomiases of the Lower Ivory Coast. G. Brouet.

35. **Experimental Tuberculosis and Vaccination.**—Calmette states that guinea-pigs invariably contracted tuberculosis when fed with tubercle bacilli in a very fine and stable emulsion as, for instance, in milk or saliva. The resulting lesions were usually in the glands and lungs, very seldom affecting the spleen or other viscera, but they were sometimes accompanied by tuberculous orchitis or arthritis and almost invariably by a tracheobronchial adenopathy. If the animals were fed small doses of dead tubercle bacilli they resisted tuberculous infection later. A small dose of tubercle bacilli heated to boiling point for ten minutes, followed 45 days later with a similar dose heated only to 65 C., vaccinated the animals so effectually that two months later they were able to bear with impunity a dose of live tubercle bacilli positively fatal for the controls.

Berliner klinische Wochenschrift.

July 1, XLIV, No. 26.

42 Differentiation of Species of Monkeys and Races of Men by Biologic Tests. (Biol. Differenzierung.) C. Bruck.
43 Microscopic Study of Pernicious Anemia. M. Mosse.
44 Further Applications of Complement Deviation Test. (Komplementfixation.) A. Schütze.
45 *Value of Vibratory Massage of Heart. (Herzvibration.) A. Selig.
46 *Morphin in Asthma. Goldschmidt.
47 *Heat Stroke. (Hitzschlag.) Senftleben.
48 *Diagnostic Importance of Electrocardiogram. F. Kraus and G. F. Nicolai.

July 8, No. 27.

49 Present Status of Pulmonary Tuberculosis. (Lungenschwindsuchtsfrage.) Aufrecht.
50 Mechanical Factors in Origin of Apical Tuberculosis. (Mech. Disposition der Lungenspitzen zur tub. Phthise.) D. Rothschild. Id. (Manubriumcorpusverbindung des Sternum.) C. Hart. Id. D. v. Hansemann. Id. M. Lissauer.
51 Experimental Research on Renal Dropsy. (Nierenwassersucht.) J. Bence.
52 *Operative Treatment of Alveolar Emphysema of Lung. L. Mohr.

45. Vibratory Massage of the Heart.—Selig found that pathologic dilatation of the heart was favorably influenced by vibratory massage applied to the front and back. Muscle fibers contract under the influence of mechanical stimuli, and the heart muscle is no exception to this rule. The vibration of the thorax walls causes the fibrils of the heart muscle to contract, and the myocardium as a whole then gradually contracts. The subjective benefit was particularly striking in cases of arteriosclerotic angina pectoris or conditions approaching it. Little if any influence could be detected on the normal heart. Selig adds in conclusion that von Jaksch has observed exceptionally the development of lung infarcts after vibration, but that this does not alter the fact that vibration is able to reduce the size of the morbidly dilated heart.

46. Morphin in Asthma.—Goldschmidt believes that fully 50 per cent. of the persons addicted to morphin have been victims of asthma. Notwithstanding this, he advises treatment of asthma with morphin, remarking that it is astonishing what small doses will give relief. From 3 to 5 mg. at most will generally cut the attack short and ensure a night's sleep. He has had patients who took these small doses for months at a time, without symptoms of morphin poisoning or addiction to the drug, and it was discontinued without the slightest trouble when the asthmatic condition subsided.

47. Heat Stroke.—Senftleben has demonstrated by personal and other experiences and much research that the effects of heat prostration are the result of concentration of the blood, entailing destruction of red corpuscles with consequent escape of hemoglobin into the blood. The excess of hemoglobin leads, he says, to sudden intense destruction of white corpuscles—accompanied by high temperature—and consequent accumulation of fibrin ferment in the blood. This leads to coagulation at points in the capillary system, especially in the lungs and brain. Excessive loss of water in sweat is the main factor in the development of heat stroke, and copious drinking is important in its prevention. When after profuse perspiration the skin begins to dry off, heat stroke, that is, general arterial anemia, is impending. If relief is not soon obtained the victim becomes unconscious and hovers on the brink of the grave. In treatment, besides combating the high temperature and defective respiration and heart action, it is important to supply more fluid to the organism. This, he says, will protect the red corpuscles and prevent further escape of hemoglobin into the blood. That already in the blood should be removed by venesection. He advises removal of from 150 to 200 gm. of blood from a vein, followed at once by infusion of salt solution through the same hollow needle. The lumen of the needle should be large enough to allow the escape of the morbidly thick venous blood.

48. Electrocardiograms.—Nicolai and Kraus give an illustrated description of a simple but very sensitive string galvanometer with which it is possible to oversee the action of the heart and register its finest details. A number of the tracings are given as obtained from man and animals. They show characteristic types for various heart affections. The instrument is recommended as valuable for diagnostic purposes in daily practice.

52. Alveolar Emphysema of the Lungs.—Mohr refers to the emphysema due to injury of the lungs from some primary changes in the bony frame of the thorax, such as sclerosis of the ribs and cartilages. The rigidity of the wall of the thorax interferes with the functioning of the diaphragm and lung. Emphysema from this cause is most frequent in the elderly, but it occurs also in the young. In 1906 Freund reported a case in which he had cured emphysema from this cause by resection of the rigid thorax wall, restoring elasticity to the parts. Mohr has also operated in a similar case, with unexpectedly good results to date. He resected 1.5 cm. of the second and third right costal cartilages and ribs. The improvement was marked; six weeks later a still larger part of the thorax wall was resected on the other side. Both cartilages and ribs were found degenerated. Since these operations the wall of the thorax rises and falls with the respiration and the patient, a man of 46, has been entirely relieved of the respiratory disturbances which had compelled him to change his occupation five years before.

Centralblatt f. Chirurgie, Leipsic.

July 6, XXXIV, No. 27.

53 *Technic of Cardiolysis. König.
54 *Treatment of Leg Ulcers Uncomplicated with Varices. (Unterschenkelgeschwüre.) A. Weischer.

July 13, No. 28.

55 Operative Treatment of Muscular Torticollis. (Musk. Schiefhals.) v. Aberle. Id. König.

July 20, No. 29.

56 Retrocolic Cholecystenteroanastomosis. F. Pendl.
57 Combined Needle and Syringe for Spinal Anesthesia. (Rückenmarksanästhesie.) W. Tomaschewski.

July 27, No. 30.

58 *Rovsing's Technic of Lumbar Ureterostomy. Wilms.
59 *Transverse Incision for Kidney Stone. (Nierensteinschnitt.) G. Marwedel.

53. Technic of Cardiolysis.—König gives a skiagraph of the thorax of a patient who had succumbed to an intercurrent affection two and a half years after resection of the wall of the thorax over the heart. The heart had adhered to the wall of the thorax in the course of chronic inflammation of the pleura. The heart disturbances had been effectually combated by the operation which had left a free and elastic wall over the heart region. König did not attempt to remove the periosteum and there was no evidence of regeneration of bone. In future he would remove the anterior periosteum, but would leave the posterior, if necessary covering the cut ends of the bones with muscle.

54. Leg Ulcers.—Weischer believes that some anomaly in the saphena is the cause of leg ulcers, even when no varicose enlargement can be detected.

58. Bilateral Ureterostomy.—Rovsing's technic after total extirpation of the bladder was described in THE JOURNAL, Aug. 31, 1907, page 809. Wilms states that pyelitis does not inevitably follow implantation of the ureters in the rectum, as he has a patient still in good health two years after such an operation. He noticed once in performing Trendelenburg's operation for puerperal pyemia—extraperitoneal ligature of the ovarian vein—that the incision gave ready access to the ureter, and he decided to do ureterostomy by this route when occasion offered. He gives an illustrated description of his technic, which he thinks has several advantages over Rovsing's. He does not shorten the ureters, and they are brought out in front, instead of in the lumbar region. He runs the ureter along under the skin, according to von Hacker's technic for colostomy. The end of the ureter can be supported with an envelope of skin and allowed to project above the skin, if desired later. His patient was a child operated on after failure of a previous operation in which the ureters had been implanted in the rectum, leaving a fistula which refused to heal.

59. Transverse Incision for Kidney Stone.—Marwedel has performed this operation more than five times and extols its advantages for all cases of kidney stone without complications, with acid urine, or only slight pyelitis.

Dermatologische Zeitschrift, Berlin.

June, XIV, No. 6.

60 Protective Action of Skin Pigment. (Hautfarbstoff als Schutzmittel). F. B. Solger.
61 Bacillus of Soft Chancre. (Ulcus Molle.) A. Serra.

July, No. 7.

62 Etiology of Soft Chancre. (Ulcus molle.) A. Serra.
63 Toxic Skin Eruption Following Roentgenization. (Toxikodermie.) Fricke.
64 Two Cases of Scleroedema. (Skleroedem.) F. Pinkus.

August, No. 8.

65 Action of Ultraviolet Light. (Quarzlampenlicht.) C. Stern and E. Hesse.
66 Molluscum Contagiosum. B. Lipschutz.
67 Primary Tuberculous Infection from Earrings. (Impftuberkulose.) P. Grosser.

Deutsche medizinische Wochenschrift, Berlin and Leipsic.

July 4, XXXIII, No. 27.

68 *Treatment of Tuberculosis of Larynx. A. Jurasz.
69 Treatment of Syphilis. (Syphilisbeh.) E. Lesser.
70 *Pupillary Phenomenon During Catatonic Stupor. (Pupillenphänomen.) A. Westphal.
71 ‡Pathology and Treatment of Addison's Disease. (Morbus Addisonii.) E. Grawitz.

72 Herpes in Affections of Central Nervous System. (Blaseneruptionen.) H. Schlesinger.
73 *Benzidin Test for Occult Blood. (Neue Blutprobe.) M. Einhorn.
74 Leukemic Blood Changes in Congenital Syphilis and Sepsis. (Leukämische Blutveränderung.) H. Flesch and A. Schossberger.
75 Spinal Anesthesia. (Lumbalanästhesie.) R. Bosse.
76 Mechanical Treatment of Torticollis. (Apparat gegen Schiefhals.) M. Wunsch.

July 11, No. 28.

77 *Threshold Percussion of Heart. (Schwellenwertsperkussion.) Goldscheider.
78 Rose's Head Tetanus. (Kopftetanus.) J. Friedländer and E. v. Meyer.
79 *Treatment of Rupture of Quadriceps Femoris. F. Karewski.
80 Paralytic Luxation of Hip. (Paralytische Luxationen d. Hüfte.) W. Böcker.
81 *Acute Osteomyelitis of Cranium. (Schädelknochen.) Kelmer.
82 *Hemorrhage Following Nephrolithotomy. (Blutungen nach Nephrolithotomie.) H. Neuhäuser.
83 Necrotic Stomatitis. G. Scherber.
84 Spinal Anesthesia. R. Bosse.

July 18, No. 29.

85 *Injection of Heterologous Blood in Malignant Tumors. (Beeinflussung bösartiger Geschwülste durch Einspritzung v. artfremden Blute.) A. Bier.
87 Complement Deviation Test in Infectious and Postinfectious Diseases. (Komplementbindungsversuche.) J. Citron.
88 *Test of Motility of Stomach. (Motilitätsprüfung.) H. Strauss and J. Leva.
89 *Gout. (Gicht.) Marcus.
90 *Splenectomy in Banti's Disease. (Milzextirpation.) L. Caro.
91 *Factitious Edema of Skin. (Edema cutis factitium.) H. Vörner.
92 Paralytic Luxation of Hip. W. Böcker.

July 25, No. 30.

93 *Pathology and Treatment of Hyperchlorhydria. (Hyperchlorhydrie.) A. Bickel.
94 Obtaining Protective Substances from Pathogenic Bacteria. (Schutzstoffe.) R. Bassenge and M. Krause.
95 *Experimental Syphilis of Cornea. (Hornhaut-syphilis.) P. Mühlens.
96 Unity of Malarial Parasite. (Arteinheit der Malariaparasiten.) A. Plehn.
98 Automobile Injuries. (Verletzungen.) Kettner.
99 Skin Changes in Addison's Disease. (Diabète bronzé.) J. Heller.
100 Ultraviolet Rays in Lupus. (Uviollampe bei Lupus.) H. Axmann.
101 A New Saccharometer. H. Citron.

August 1, No. 31.

102 Diagnosis and Therapy of Psychic and Nervous Diseases. Sommer.
103 *Arteriosclerosis of Pulmonary Artery. (Lungenarterie.) G. Mönckeberg.
104 Etiology and Therapy of Chorioepithelioma. P. Kroemer.
105 *Bier's Hyperemia in Otology. (Biersche Stauung.) Leutert.
106 Hyperleucocytosis in Severe Infections. (Abnorm hohe Leucocytose.) H. Hirschfeld and R. Kothe.
107 Fatal Hemorrhage from Duodenal Ulcer Following Appendectomy. (Blutung aus einem Duodenalgeschwür). R. Mühsam.

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109 Suppurative Labyrinthitis. (Labyrinthelterungen.) B. Heine.
110 *Etiology of Trachoma. (Halberstädter and Prowazek.
111 Serum Diagnosis of Syphilis. M. Wassermann and G. Meyer.
112 Indications for Use of High-Frequency Current in Treatment. (Hochfrequenzströmen.) F. Nagelschmidt.
113 Diagnosis and Treatment of Chronic Arthritis. F. Franke. (Commenced in No. 29.)
114 Etiology and Treatment of Chorioepithelioma. P. Kroemer.
115 Modification of Neisser's Suspensory. C. Schindler.

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116 Progress in Diagnosis of Nervous Diseases. (Nervenkrankheiten.) L. W. Weber.
117 Bilateral Nephrolithiasis. P. Krause.
118 Sequestrated Abscess of Spleen. (Milzabszess). Doebbelin.
119 Status of Actinotherapy. G. J. Mueller.
120 *Tsutsugamushi Disease. (Ueberschwemmungsfieber von Baelz.) M. Ogata and K. Ishiwara.
121 *Tuberculin Suppositories. A. Lissauer.

68. Treatment of Laryngeal Tuberculosis.—Jurasz claims that while tuberculosis of the larynx is a serious affection, it is by no means a fatal one. Prophylaxis is of great importance inasmuch as the laryngeal affection invariably is secondary to a pulmonary one. It is essential to place the larynx at rest, to avoid conditions which excite the patient to cough or which irritate the mucous membrane of the larynx, and to place him on a diet which is regulated with reference to its bulk and consistency because swallowing hard, rough, solid foods may irritate the affected part. In the early stages of the disease inhalations and insufflations are indicated; astringents are to be avoided, and manual treatment, such as applications of silver nitrate or any other remedy, is contraindicated. If the disease is widespread the parts are to be curetted and lactic acid applied until cicatrization has taken place; other less irritating antiseptics may be used, if necessary. Recurrences are treated with the galvanocautery. The author recommends Bier's hyperemia, applying constriction around the neck, as an excellent means for controlling the pain. Local anesthesia may be resorted to in cases in which the hyperemia fails to relieve. Actinotherapy and stasis therapy, it is said, have yielded some remarkable results in the treatment of laryngeal tuberculosis, but these methods must be investigated further before any definite statements as to their value can be made.

70. Pupillary Phenomenon.—Westphal narrates the case of a girl, aged 20, who suddenly manifested symptoms of insanity, with marked suicidal tendencies. Catatonia was very marked. Examination of the nervous system failed to reveal any deviation from the normal, except the condition of the pupils. As a rule, the pupils were normal, but at times, apparently for no reason, the pupils became oval or elliptical in shape, and the greater this departure from the normal in shape, the less did the pupils react to light. Often there was no apparent reaction to light. The author concludes that this phenomenon depended entirely for its occurrence on the fact that the patient was in a catatonic stupor.

71. Addison's Disease.—Grawitz reports a case of Addison's disease which exhibited all the typical symptoms of this affection. When the patient was first seen the adynamia was so marked that an unfavorable prognosis was made. Owing to the secretory and motor insufficiency of the stomach, gastric lavage with salt solution was practiced. Nutrient enemas were given and hydrochloric acid, but nothing else in the way of remedial agents. The patient slowly gained in strength and weight and eventually was dismissed in a very much improved condition. The skin pigmentation also lessened, but not so much but that a military surgeon was able to diagnose Addison's disease when the applicant was examined for the service. Since 1903 the patient has improved steadily and the author believes that the man may be considered as cured. In another instance, to which reference is made, this treatment produced similar good results. Grawitz emphasizes the importance of gastric lavage in these and other cases for the purpose of removing from the gastrointestinal canal toxins which it may contain.

73.—See THE JOURNAL for June 22, 1907, page 2161.

77. Threshold Percussion.—Further experience has convinced Goldscheider of the fact that the very lightest percussion stroke is sufficient to outline the borders of the heart. He believes that he has improved the technic of his threshold percussion. The rubber cap of a medicine dropper is fitted over the end of a glass rod, which is either straight or slightly bent, as preferred. The covered end of the rod is placed against the chest wall, the end resting in the intercostal spaces, the rod at an angle with the chest wall but parallel with the boundary that is to be percussed. The rod is tapped lightly with the finger at some distance from the proximal end. The advantages of this procedure are said to be many, but notable is the one that a very small area can be percussed at one time, and that the instrument can be placed in the intercostal spaces. The percussion note is clear and distinct, and the boundaries of an organ, especially the heart or liver, can be outlined readily. The percussion is done in the mid-respiratory position, and then the patient is told to inspire slowly. The dorsal position of the patient is preferred.

79. Rupture of Quadriceps Femoris.—Karewski reports a case of complete rupture of the quadriceps femoris muscle in which firm union was effected by the application of strips of adhesive plaster above and below the knee, the ends of these strips being brought together, as desired, by means of strong rubber bands. The article is illustrated.

81. Acute Osteomyelitis of Cranium.—Kelmer reports a case of acute osteomyelitis which followed a furuncle over the right temple and involved the frontal, right temporal and the occipital bones. The process became very extensive and an operation was necessitated. A number of pus pockets were found and emptied. The patient recovered.

82. Hemorrhage After Nephrolithotomy.—Neuhäuser reviews briefly the etiology of hemorrhage after nephrectomy, but offers nothing new in the way of treatment. He favors

tamponade, considering it the most effective method of checking the hemorrhage.

85. **Heterologous Blood Injections in Malignant Tumors.**—Bier claims that following the injection of from 10 to 20 c.c. of defibrinated pig's blood into the subcutaneous tissues there is noted the gradual onset of a local inflammation, which reaches its height on the third day, and then declines gradually. There is also slight fever and chilly sensations. Continued injections finally produce the same reaction with lesser quantities of blood. No permanent disability is caused by these injections, and he found that only pathologic tissues are affected by them. In the case of ulcerating carcinomas all degenerative processes cease almost immediately, but the pain, which is usually severe, is not lessened, although in other affections, not carcinomas, the injection of this blood usually relieves the patient of pain. Bier injected the blood, as a rule, directly into the growth. In some cases the growth of the tumor was checked; in others the tumor became necrotic, while in still others there was every appearance of a cure having been effected, until the tissue was examined microscopically, when tumor cells were discovered. In only one case, a lupus carcinoma, was Bier able to announce that a cure had been effected after four injections of defibrinated pig's blood. But the Roentgen ray had previously been used in this case, so that he is not prepared to ascribe the cure entirely or with any degree of positiveness to the injection of the blood. He says that he can not, therefore, report a single, uncontrovertible, defensible case of cure having been effected by this method. In fact, he seems to be rather in doubt that the injection of heterologous blood ever will be a specific treatment for malignant tumors, although further researches will be made and the results reported later. The method has also been tried in three cases of prostatic hypertrophy with urinary retention, and with some success, so far as the urinary symptoms were concerned.

88. **Gastric Motility.**—Strauss and Leva describe a new test of the motility of the stomach, which consists in the use of a prepared test meal with constant and known fat content, and refractometric fat determination of all of the ingested food, obtained by lavage. Butter is the fat used; the food consists of zwieback and tea.

89. **Gout.**—In two cases of gout Marcus studied the diuretic effect of distilled water, in one case, and mineral water (Salzbrunnen), in the other. Diuresis was increased in both cases, but it was most marked in the patient who drank only distilled water. The nitrogen output was greatest after the use of the mineral water. The concentration of the blood was not affected in either case.

90. **Splenectomy in Banti's Disease.**—One year after the operation Caro's patient, a man, had gained in weight and was feeling well in every way. Before the operation the blood findings were as follows: Hemoglobin, 35; red cells, 1,400,000; leucocytes, 2,600. One year after the operation the blood findings were: Hemoglobin, 80; red cells, 4,000,000; leucocytes, 14,800. Another notable feature in the case was an elevation of body temperature after the operation, although there had also been a slight elevation—38.4 C.—before operation. This temperature rise, the author concludes, was caused by the toxemia incident to the disease.

91. **Factitious Edema of Skin.**—Vörner reports the case of a man who would develop severe edema of the skin when any portion of the skin was subjected to a constant and continuous pressure, such as sitting on a hard bench for some time, swinging a heavy hammer, or leaning the head against a wall. No cause for the affection is given, although the author believes that the condition is allied to Quincke's disease. Treatment was expectant in character and afforded relief for the time being only.

93. **Treatment of Hyperchlorhydria.**—Bickel believes in the dietetic treatment of this condition, giving vegetables and fats a considerable place in the diet, although he emphasizes what was said by Boas, that a mixed diet is the best.

95. **Experimental Syphilis of Cornea.**—Mühlens succeeded in producing a specific lesion on the cornea by inoculating it with fresh extract of the organs of a case of congenital syphilis.

103. **Arteriosclerosis of Pulmonary Artery.**—Mönckeberg reports two cases of arteriosclerosis of the pulmonary artery, with hypertrophy of a high grade of the right heart, without any valvular affection in one of the cases. In this case a large thrombus extended from the artery into the heart, but without occluding the vessel. The author regards the thrombus in this case as autochthonous.

110. **Etiology of Trachoma.**—Halberstädter and Prowazek describe further the cell inclusions which they have seen in the cells taken from the conjunctiva of cases of trachoma. These inclusions the authors believe to be micro-organisms because they have a distinct, characteristic and constant appearance, and they have been able to produce the disease experimentally in orang-outangs. In the case of other animals, such as guinea-pigs, rabbits and other apes, the experiments were negative.

120. **Tsutsugamushi Disease.**—This affection is also known as the inundation fever of Baelz. The authors isolated a protozoan organism from the ulcers which are so frequently met in this disease, and describe it fully. The organism has been cultivated and the disease transmitted to animals by inoculation.

121. **Tuberculin Suppositories.**—Since early in 1906 Lissauer has made use of tuberculin, in suppositories, in the treatment of 40 cases of tuberculosis in all stages of the disease, the prognosis for a cure being unfavorable in most of the cases. The tuberculin was placed inside of hollow suppositories, in doses varying from 0.5 mg. to 25 cg., sometimes daily and sometimes at intervals of one or more days. The results obtained were equal to those following the use of tuberculin by mouth, but he is not prepared as yet to make any positive statements. No local reaction was caused by the suppositories, except occasionally a little itching which was controlled with a glycerin suppository. The author administered tuberculin by mouth (in gelatin capsules) in two cases of advanced phthisis, but no result was noted.

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122 Role of Celiac and Mesenteric Plexuses in Abdominal Shock. L. Buerger and J. W. Churchman.
123 Fistula Between Biliary Passages and Bronchus. (Leber-Bronchusfistein.) F. Eichler.
124 Roentgen Treatment of Symmetrical Enlargement of Lachrymal and Salivary Glands. (Mikuliczsche Krankheit.) E. Ranzi.
125 Congenital Defects in Thorax. (Thoraxdefekte.) Id.
126 Chronic Appendicitis without Attacks. (Anfallsfreie App.) P. Klemm.
127 Pathogenesis of Colic Pains. (Kolikschmerzen.) Wilms.
128 Typhoid Cystitis. (Cystitis typhosa.) H. Schaedel.
129 Tetany After Removal of Parathyroids. (Tetanie parathyreopriva.) J. Erdheim.
130 Cysts in the Cerebellum. (Kleinhirncysten.) H. Scholz.
131 Importance of Pathologic Appendix for the Female Organism. (Bedeutung des kranken App.) R. Römer.
132 Behavior of Pupils in Affections of the Appendix. (Verhalten der Pupillen bei Erkr. des Wurmfortsatzes.) P. V. Jezierski.
133 Two Cases of Acute Dilatation of Stomach in Typhoid. (Magenerweiterung bei Typh. abd.) H. Wichern.
134 Experimental Treatment of Tetanus with Curarin. A. Läwen.

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135 *Acute Dilatation of Stomach. (Magenerweiterung.) W. Braun and H. Seidel.
136 Albumin Stones and Elimination of Membranous Masses by Urine-Producing Apparatus. (Eiweissteine der Niere, etc.) P. Morawitz and C. Adrian.
137 *Fistula Between Stomach and Colon. (Fistula gastrocolica.) Port and Reizenstein.
138 Action of Subcutaneous Injection of Eserin on Peristalsis. (Physostigmin zur Anregung der Peristaltik.) K. Vogel.
139 *Diagnosis of Operability of Tumors of Brain and Spinal Cord and Results of Operations. (Hirn- u. Rückenmarkstumoren.) F. Schultze.
140 *Phlegmonous Gastritis During Pregnancy. (Phlegmone des Magens in d. Schwangerschaft.) F. Kermauner.
141 Hysteric Scoliosis. (Hysterische Skoliose.) M. Strauss.
142 Study of Fever After Operations for Goiter. (Kropfoperationen.) K. Schultze.
143 Physiologic Bases and Practical Value of the Over-pressure Technic in Excluding the Consequences of Pneumothorax. (Ueberdruckverfahren.) H. Seidel.
144 *Atropin in Ileus. C. Schulz.

135. **Acute Dilatation of the Stomach.**—The conclusions of considerable experimental research and clinical experience by Braun and Seidel are summarized in the statement that acute dilatation of the stomach is the expression and consequence of acute insufficiency of the stomach. As a rule the trouble is the result of some disturbance in the innervation, especially in

the surgical forms of acute dilatation, but it may occur in a healthy stomach, with intact innervation, in consequence of some sudden error in diet or abnormal decomposition of the stomach contents. Even in this case toxic and reflex factors may cooperate in the dilatation of the organ. They found no evidence of a valvular closure at the cardia. The course of acute dilatation varies in different cases. It should be suspected after a laparotomy when convalescence does not proceed smoothly, especially if the patient complains of a vague sense of oppression in the upper abdomen. The stomach should be siphoned out at once. This will clear up the diagnosis between peritonitis, ileus and pancreatitis on one hand and acute dilatation on the other, and pave the way for prompt recovery. The prognosis of severe dilatation is grave. Of 64 cases reported in the literature 47 were fatal. The main point is to prevent severe acute dilatation. This can be accomplished by recognizing it in its incipiency and treating motor insufficiency whenever encountered. Occlusion of arteries and kinking of the duodenum are liable to occur secondary to the dilatation, but should not be regarded as primary factors. A number of cases are described. In one, a boy of 12, of a nervous disposition, requiring general anesthesia several times for hernia and repair of a perineal injury, with retention catheter, developed severe acute dilatation of the stomach. It was probably the result of reflex action from the bladder and urethra, as the stomach returned to normal size the day following the removal of the catheter. Recurring tetany further testified to the extreme excitability of the nervous system in this case.

137. **Fistula Between Stomach and Colon.**—In this communication the fourth case of a fistulous opening between stomach and colon cured by operative treatment is described in detail. The diagnosis was based on the identical composition of the stools and stomach content, and the fact that it was possible to distend the stomach by inflation through the intestines, and that a stain and bismuth introduced into the intestines were refound in the stomach. The diagnosis was confirmed by Roentgen examination. There were no symptoms to indicate ileus except the presence of fecal masses in the stomach, while the general appearance and good appetite spoke against cancer. Large doses of bismuth improved the patient's condition very much, the stomach at times being quite empty. The bismuth probably made the fecal masses more solid and checked the development of gas. A retrocolic jejunostomy had previously been performed and the colon had grown to the stomach close to the point of junction. It was detached, the opening sutured, and omentum drawn over the wound to protect against recurrence. The patient has since been free from disturbances.

138. **Action of Eserin.**—Vogel reviews the history of the use of eserin or physostigmin as a peristaltic, and relates further experiences with it in subcutaneous injection. Later operations on some of his patients treated in this way showed that the drug had done its work and effectually prevented the reformation of adhesions. He found it particularly useful in cases of abdominal or general contusion with more or less injury of bones, kidneys and nervous system. These patients frequently suffer more from the almost invariable and tormenting meteorism than from their injury. They shrink from taking medicines or enemas, but are generally relieved at once by a subcutaneous injection of physostigmin. He gives at least 0.0005 gm. (0.0075 grain) and generally 0.001 gm. (0.015 grain), repeating the dose after several hours. The action of the drug can be promoted by giving a small enema of glycerin which alone has no effect except on the lower bowel. He does not believe in purging the patient too energetically before a laparotomy, but sees that the bowels are emptied of all old fecal masses, before undertaking any operation. He gives castor oil two days before an operation on the small intestine, thus giving the intestines time to recover from the exhaustion of the effort. A purge is not necessary before other operations unless there is reason to assume the presence of old fecal masses.

139. **Operability of Brain and Spinal Cord Tumors.**—Schultze reports six cases of spinal cord tumors in which the patients were cured by operative treatment out of a total of 13 operated on. Another patient in the group has been very much improved. In 19 cases of brain tumors, good results were obtained only in 3 instances, the best result being in a case in which the diagnosis wavered between chronic hydrocephalus and a tumor. The lateral ventricle was entered according to Neisser's technic and the fluid evacuated; this procedure was followed by great and lasting improvement for nearly a year, when the patient died outside the clinic. Almost all the other patients died during or soon after the operation, but two were very much relieved by removal of part of the tumor, and the improvement persisted for months. A glioma weighing 18 gm. (270 grains), was shelled out from the cerebellum of an adult with complete recovery for a year and a half, and possibly longer. Children do not bear such operations so well as adults.

140. **Phlegmonous Gastritis in Pregnancy.**—Kermauner describes a case in which a tuberculous pregnant woman presented symptoms accepted as the aggravation of the tuberculous infection under the influence of the pregnancy. After an insidious course for three weeks, with considerable prostration but no rise of temperature, moderate meteorism, general abdominal tenderness and sporadic vomiting, the general condition grew worse and the fetus was spontaneously delivered. The patient died in less than a month after the first symptoms. Autopsy revealed a phlegmonous gastritis with old, retrogressing tuberculous lesions in the lungs. In some of the 55 cases of phlegmonous gastritis collected by Jacoby, the course was fulminating, suggesting poisoning. The prognosis is absolutely bad.

144. **Atropin in Ileus.**—Schulz states that atropin has been successful to date in inducing a movement of the bowels in 100 per cent. of 56 cases of spastic ileus, in 95 per cent. of 20 cases of paralytic ileus, and in 68 per cent. of 54 cases of mechanical ileus. He claims for the drug that it regulates the circulation of blood through the region and abolishes pain, spasm and vomiting, while it promotes the absorption of the local inflammatory process. In every case of acute occlusion of the intestines the physician should give atropin as his first measure. He advises giving large doses which, he states, are especially useful in neutralizing the injurious action of the ptomains which are being produced in the occluded intestine, and are practically harmless, even when the symptoms of atropin intoxication occur. As soon as acute ileus is diagnosed or even surmised, he injects 0.002 gm. for an adult and 0.0005 gm. for a child, without resorting to preparations of opium. He generally injects, before the atropin, 0.0012 gm. of morphin, to protect the brain, but does not regard this as indispensable. If the first injection shows no appreciable results or merely improvement of the general condition, without passage of flatus or stools, he repeats the injections systematically, as soon as the patient has recovered sufficiently from the preceding injection. He applies at the same time certain physical measures, oil enemas, hot water bottles and lavage of the stomach. As an operation may become necessary, he has the patient taken to a hospital, but he advises against operating too early, as the effect of the atropin may be felt even in long neglected cases, while the proportion of recoveries after operative treatment, he says, is the same whether the operation is done the third day or in the second week after the first symptoms. The earlier the atropin is injected, the better the results, as a rule. If there is no stool within from 24 to 36 hours the patient should be prepared for an operation. Even in desperate conditions he states that the atropin should be injected to improve the heart action and circulation and to arrest vomiting while stimulating peristalsis. If symptoms of severe intoxication develop, morphin should be given as an antidote to the atropin. The long disturbance in the intestine may lead to perforation later. He gives the particulars of 9 cases of spastic, 5 of paralytic and 17 of mechanical ileus, from his own experience. The interval between the passage of the first flatus and of stool was never over an hour, and generally only a few minutes in the cases of dynamic ileus, while there was an interval of 12 or 14 hours in the mechanical variety.

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145 The Laws of Physics the Basis for the Behavior of the Sexual Organs During Pregnancy and Delivery. A. Czyzewicz.
146 *Manual Removal of Placenta. (Man. Placentalösung.) L. Adler and E. Kraus.
147 *Treatment of Inoperable Genital Prolapse. M. Stolz.
148 *Carcinomatous Degeneration of Stump of Uterus After Supravaginal Amputation. G. Burckhard.
149 *Enchondroma of the Pelvis, Especially as an Obstacle to Childbirth. (Becken-Enchondrom.) S. Schoppig.

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150 Histogenesis of Erosions of Cervix. (Portio-Erosionen.) J. Schottlaender.
151 *Cesarean Section in Infection of Uterine Cavity. (Kaiserschnitt bei Inf. der Uhöhle.) J. Veit.
152 Connection Between the So-called Papillary Uterine Glands and the Various Phases of Menstruation. (Papilläre Uterindrüsen u. Menstruationsphasen.) A. Hartje.
153 *Epilepsy and Pregnancy. (Ep. u. Gravidität.) M. Neu.

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154 *Vaginal Ovariotomies in Pregnancy. I. Democh.
155 *Appendicitis in Pregnancy and the Puerperium. (App. in gravidität u. puerperio.) F. Stähler.
156 *Treatment of Peritoneal Wound. (Perit. Wundbehandlung.) O. Pankow.
157 *Osteomalacia in Westphalia. C. Everke.
158 *Chemical and Histologic Study of Pubiotomy. Offergeld.
159 Prospects for Active and Passive Immunization of Man Against Streptococci. (Aussichten der Immunisierung gegen Strept.) W. Zangemeister.

146. **Manual Removal of the Placenta.**—Adler and Kraus review their experiences in 161 cases in which the placenta was removed by hand. Three of the patients died from other causes and they believe that manual removal of the placenta might have prevented the fatal outcome in one case if done earlier. After the placenta is removed the uterine cavity is rinsed out with a hot disinfectant to stimulate the uterus to contract better. Gloves are used only in contaminated cases, as they are liable to carry germs into the uterus while the gloved hand is more apt to leave scraps of placenta behind.

147. **Treatment of Inoperable Genital Prolapse.**—Stolz refers only to inoperable prolapse in women past the menopause, and describes with illustrations a pessary which is able to reduce the prolapse and to keep it under control without injury or annoyance to the wearer. He has used it in four cases with great satisfaction. It consists of a thick ring with a projecting crossbar, as wide and rounding as the rest of the ring. The principle is the same as in the Menge and Loehlein pessaries, but the pressure is more evenly distributed.

148. **Carcinomatous Degeneration of Stump of Uterus After Supravaginal Amputation.**—Burckhard reviews 17 cases he has found in the literature and reports another case. His patient was a woman of 54, who had been in good health for a year and a half after supravaginal amputation of the uterus on account of a large myoma. There was nothing to suggest cancer at the time of the operation, but in several of the other cases the cancer must have been present at the time of the amputation. This reduces to a dozen the number of known cases of cancerous degeneration of the stump of the uterus—a comparatively insignificant number in view of the hundreds of supravaginal amputations done every year.

149. **Enchondroma in the Pelvis as Obstacle to Delivery.**—Schoppig reports a case in which Cesarean section was required owing to the rapid growth of an enchondroma in the pelvis. The patient succumbed to sepsis. He has found reports of 93 cases of such growths in the literature, and tabulates the details of 22 cases in women which did not interfere with delivery and of 32 others in which they proved an obstacle. The enchondroma seems to develop with especial rapidity under the influence of pregnancy, as was noticed particularly in 10 cases. The growth should be removed, even during pregnancy, but the difficulty of access and the adhesions are liable to stay the surgeon's hand. In a number of cases the growth filled the entire half of the pelvis or the entire small pelvis and vagina. The majority of the patients were women between 20 and 40. The growth was successfully removed in 7 cases in non-pregnant women, but extirpation was not attempted in any of the obstetric cases.

151. **Cesarean Section in Infection of the Uterine Cavity.**—Veit describes his experience with Frank's method of "extraperitoneal" Cesarean section, mentioned in THE JOURNAL, June 22, 1907, page 2132. He found the technic simple and easy. The transverse incision, a few finger breadths above the symphysis, is carried down through the peritoneum; the reflection of the peritoneum over the uterus then presents in the wound if the bladder has been previously evacuated. This uterine reflection of the peritoneum is not firmly attached, and after a transverse incision through it, its edge above and below is sutured to the margin of the parietal sheet of the peritoneum. Buttonhole sutures are preferable, as a continuous suture might draw up the opening too small. The lower segment of the uterus is then incised across, avoiding the side veins, and the child and afterbirth are delivered, after which the lower segment of the uterus is sutured, then the fascia and the skin. The operation requires a little more time than ordinary Cesarean section, but this is immaterial. The main question is whether or not the suture of the lower segment of the uterus is going to hold. He made no attempt to drain in either of his two cases, although one patient had been repeatedly examined before delivery and there was prolapse of the pulsating umbilical cord, with a flat pelvis and conjugate vera diameter of only 6.25 cm. This technic, Veit declares, not only prevents entrance of putrefaction germs into the abdominal cavity, but the cavity is kept dry and there is no production of a medium favorable to the growth of germs. The abdominal wound offers a favorable soil, but if local inflammation results not much harm is done if the wound is promptly reopened. If the germs in the uterine cavity are extremely virulent streptococci, then all measures are futile, except, possibly, the use of a serum. Streptococci that are only mildly virulent or that have become attenuated, behave in respect to the abdominal cavity like the putrefaction germs; they prove harmless or are soon conquered when they find no favorable culture medium in dying material. The Frank technic, he states, allows good oversight of the influence of various germs on the course of the wound. It protects the patient against saprophytes and only slightly virulent germs, but, of course, it is unable to render harmless extremely virulent germs.

153. **Epilepsy in Pregnancy.**—Neu's patient was a primipara in the seventh month of pregnancy who suddenly developed fatal fulminating status epilepticus. Her history showed a mild tendency to epilepsy in previous years, but she had been in supposedly good health for a long time. He discusses the question whether or not pregnancy alone is able to develop epilepsy, and decides in the negative, adding that severe status epilepticus in a pregnant woman should always suggest the advisability of emptying the uterus.

154. **Vaginal Ovariotomy in Pregnancy.**—Democh summarizes 20 cases, reports of which have been published in German literature, and adds one from personal experience. In 17 cases the pregnancy was in the first to the fifth months; posterior colpotomy was the rule in all but 2. Omitting 2 cases in which abortion had already occurred, the mortality was zero for the children and the results were excellent for the patients in every way. The mortality with anterior colpotomy was 50 per cent. for the children, but the results for the mother were equally good with both technics.

155. **Appendicitis in Pregnancy and the Puerperium.**—Stähler cites 12 cases in which appendicitis was diagnosed during the course of pregnancy, once at autopsy and 11 times by an operation, and adds a thirteenth case. This, he says, brings to 111 the cases on record. The histories of these cases suggest that the pregnant condition should turn the scale in favor of an early operation, in the interests of the child. In 38 per cent. of 104 cases the pregnancy continued undisturbed to normal delivery both with and without an operation.

156. **Treatment of Wound in Peritoneum.**—Pankow gives the results of a long series of experiments on animals in which a wound in the peritoneum was treated in different ways. Adhesions invariably formed in case of infection of the abdominal cavity; the conditions were most unfavorable when the peritoneum was injured and left untreated. When the parietal peritoneum was injured until there was diffuse, punctate hemorrhage, adhesions were the rule, but when the peritoneum was cauterized, without hemorrhage into the abdominal cavity, adhesions only rarely formed. The conclusions of the research are in favor of the use of the actual cautery or cauterization

with absolute alcohol or other means, to reduce the danger of infection and formation of adhesions when there is diffuse bleeding over a wounded surface.

157. **Osteomalacia in Westphalia.**—Everke has encountered forty-one cases of osteomalacia in the older part of the city of Bochum during the last 14 years. The affection is extremely rare elsewhere in the district. Insufficient nourishment and damp houses were excluded in all his cases. The patients were almost all multiparæ. The first pregnancies had occurred without trouble, but the osteomalacia developed in the course of the later pregnancies. Total extirpation and castration had a remarkably favorable effect, the pains in bones and muscles vanishing soon after the operation. The pains in the sacrum generally persisted to a slight extent, probably being the result of exhaustion of the muscle and ligament apparatus as the center of gravity of the body was forced forward by the stooping position imposed by the affection. The operation arrested the softening of the bones and they grew hard again and were able to support the body properly. By excluding ovulation and the possibility of a new pregnancy, he asserts, danger of the flaring up anew of the osteomalacia is entirely averted.

158. **Chemical and Histologic Study of Pubiotomy.**—Offergeld performed pubiotomy on large numbers of cats, dogs and rabbits. The defect left healed over with connective tissue; there was no bone formation, although mineral salts became deposited in the cartilage-connective tissue consolidation. Long feeding with phosphorus and lime salts had no effect in increasing the amount of mineral salts deposited in the consolidation, but administration of lactic acid prevented their being deposited at the point. He remarks that it is remarkable that there is no regeneration of bone after pubiotomy. Probably the gap left is too great for stimulation of bone regeneration, especially as the flat bones lack the faculty for regeneration displayed by the long bones. The pubis has exceptionally few nourishing blood vessels. Those it possesses are in the ascending and descending ramus, not at the point where the bone is severed. His experiments show that it is possible to exert a direct influence on the consolidation by increasing the precipitation of lime in the connective tissue at the point. This can be accomplished by rubbing the sawed stumps together and by long applied venous hyperemia, while reducing the intake of water and of organic salts. Under these conditions, the inorganic salts, especially the lime salts, increase in proportion, and the connective tissue consolidation becomes very firm.

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160 *Colon Bacillus Infection. (Kolliinfektion.) H. Fehling.
161 Blood Supply of Rectum in Relation to Operative Gangrene. (Gefässversorgung des Mastdarmes.) P. Sudeck.
162 *Gastric Ulcer, Especially with Reference to Pylorospasm and Hypersecretion. (Klinik des Magengeschwüres.) F. Best.
163 Tuberculin Test in Early Diagnosis of Pulmonary Tuberculosis. (Früh-Diagnose, etc. in der ärztlichen Praxis.) O. Ziegler.
164 Diagnostic Importance of Tests of Association. (Assoziationsversuche.) M. Isserlin.
165 Infant Feeding with Human Milk Heated to 140 F. (Ernährungsversuche.) K. Potpeschnig.
166 Spinous Process Torn Off by Muscular Traction. (Absprengung von Wirbeldornfortsätzen.) F. Sauer.
167 *Autoinjection of Cerebrospinal Fluid in Meningitis. (Ein therap. Versuch bei epid. Genickstarre.) Radmann.

160. **Colon Bacillus Infection.**—Fehling has observed a case in which a pregnant woman was unable to change her linen for some hours after it had become wet with urine. The conditions favored the growth of colon bacilli from the anus, with the result that cystitis developed, followed by pyelonephritis. In another similar case the woman washed the parts so energetically that cystitis and pyelonephritis followed. In these cases the cystitis was the first to develop, and colon bacilli were found in pure cultures in the bladder urine, which during the acute stage was sometimes as white as milk. In postoperative infection staphylococci and streptococci always appear first in the urine, and colon bacilli not until much later. Pure coli infection is generally a local process, the blood being almost invariably sterile. If both kidneys become affected, abortion is liable to occur spontaneously or may have to be induced to save the mother. In a recent case a surgeon advised removal of the affected kidney, but after artificial premature delivery the process in the kidney subsided spontaneously. A year later the patient passed through a normal pregnancy. Fehling reports further two cases of colon bacillus infection of the pregnant uterus. The bacilli had evidently found their way into the uterus and had been swallowed by the fetus in the amniotic fluid. The result was severe infection of the fetus and inflammation of the uterus, but the women soon recovered after induced delivery. In both these cases the mother's blood was sterile while the fetal heart contained colon bacilli and cocci. There was no other process in the mother in one case, but in the other there were evidences of cystitis and pyelonephritis. All the symptoms subsided after delivery. He also describes a case of pure colon bacillus sepsis, the eighth in the literature. The woman succumbed on the sixty-eighth day after pubiotomy. Forceps had been required later and manual removal of the placenta. This experience converted him to the subcutaneous technic for pubiotomy.

162. **Gastric Ulcer.**—Best cites a number of examples to show that the prospects of healing of a gastric ulcer depend largely on its location. Those in the pyloric region have to stand much more strain and traction, and pylorospasm and hypersecretion, with motor insufficiency and dilatation of the stomach, are liable to be the result of the vicious circle caused by the ulcer. Best agrees with Krönlein that every case of evident stenosis of the pylorus indicates operative treatment. He has found that the swallowing of air is a comparatively frequent accompaniment of stomach affections, and aggravates them by dilating the stomach and causing salivation. When encountered, it is an additional argument in favor of operative treatment, as he knows of no cure for the habit.

167. **Subcutaneous Autoinjection of Cerebrospinal Fluid in Meningitis.**—Radmann had only two opportunities to try this treatment, but thinks that it has a future as a form of serotherapy. His experience has convinced him of its harmlessness and of its apparently good results. After withdrawal of 25 c.c. of cerebrospinal fluid by lumbar puncture to relieve the patients, at about the ninth day of epidemic cerebrospinal meningits, he reinjected 8 c.c. of the patient's own fluid under the skin of the forearm. He thinks that no harm would be done by injecting the patient's own fluid in large amounts from the first, in case the diagnosis is assured. There was no local reaction in his cases, but it might follow injection of the fluid in case of ordinary suppurative meningitis or mixed infection.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

ANATOMY OF THE BRAIN AND SPINAL CORD, with Special Reference to Mechanism and Function. By Harris E. Santee, M.D., Ph.D., Professor of Anatomy in the College of Physicians and Surgeons, Medical Department, University of Illinois. Fourth Edition, Revised and Enlarged. Illustrated. Cloth. Pp. 454. Price, $4.00. Philadelphia: P. Blakiston's Son & Co., 1907.

TEXT-BOOK OF CLINICAL ANATOMY for Students and Practitioners. By Daniel N. Eisendrath, A.B., M.D., Adjunct Professor of Surgery in the Medical Department of the University of Illinois. Second Edition, Thoroughly Revised. Cloth. Pp. 535. Price, $5.00. Philadelphia and London: W. B. Saunders Co., 1907.

PHARMACOLOGY AND THERAPEUTICS. By Reynold Webb Wilcox, M.D., LL.D., Professor of Medicine at the New York Post-Graduate Medical School and Hospital, etc. Seventh Edition, Revised, with Index of Symptoms and Diseases. Cloth. Pp. 885. Price, $3.00 net. Philadelphia: P. Blakiston's Son & Co., 1907.

POINTS IN SURGICAL ANATOMY OF THE TEMPORAL BONE from Birth to Adult Life. By Arthur H. Cheatle, F.R.C.S., Aural Surgeon to King's College Hospital and to King Edward VII's Hospital for Officers. Cloth. Pp. 129. Price, $1.25. London: J. & A Churchill, 1907

THIRD ANNUAL REPORT OF THE HENRY PHIPPS INSTITUTE for the Study, Treatment and Prevention of Tuberculosis. Feb. 1, 1905, to Feb. 1, 1906. Edited by Joseph Walsh, A.M., M.D. Paper. Pp. 410. Philadelphia: Henry Phipps Institute, 1907.

INTERNATIONAL MILITARY-MEDICAL STATISTICS FOR THE YEAR 1906. Supplement to the Annual Report of the Surgeon General of the Army for the Year 1907. Paper. Pp. 14. Washington: Government Printing Office, 1907.

FIRST ANNUAL REPORT OF THE MOUNT SINAI HOSPITAL SOCIETY, 17 Stanford St., Boston. Together with a List of the Officers and Members. Paper. Boston: Ashland Press, 1907.